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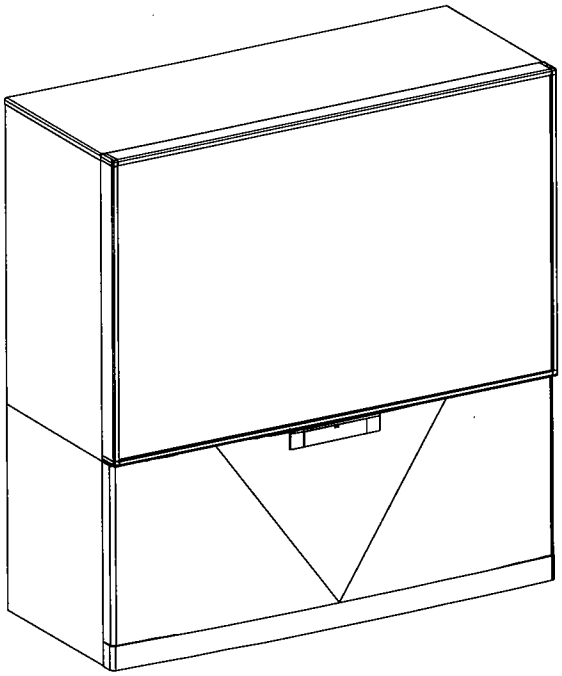
1999

MITSUBISHI

Service Manual

PROJECTION TELEVISION
V15 CHASSIS



MODELS

WS-65903

WS-73903

PRELIMINARY

CAUTION:
Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in this manual.

SPECIFICATIONS

- **Power Input** : AC 120V, 60Hz
- **Power Consumption** : 365W
- **Frequency Range** : VHF 54 ~ 470MHz
  UHF 470 ~ 806MHz
- **Antenna Input** : VHF/UHF 75Ω unbalanced
  Single axis input
- **CRT** :

[WS-65903]	[WS-73903]
P16LNM07RJA-R	P21LPZ03RJA-R
P16LNM07HKA-G	P21LPZ03HKA-G
P16LNM07BMB-B	P21LPZ03BMB-B

- **High Voltage** : 32.0kV (at 0A)
- **Speaker** : 5" round type, full range 2 pcs.
  : (8Ω 20W)
  : 2" round type, tweeter 2 pcs.
  : (8Ω 20W)
- **Weight** : [WS-65903] 365 lbs
  [WS-73903] 411 lbs
- **Cabinet Dimensions** : [WS-65903]
  59" (W) X 62" (H) X 28" (D)
  [WS-73903]
  66" (W) X 67" (H) X 30" (D)
- **Input Level** : VIDEO IN JACK (RCA Type)
  1.0Vp-p 75Ω unbalanced
  : AUDIO IN JACK (RCA Type)
  -4.7dBm 43kΩ unbalanced
  : S-VIDEO IN JACK
  (Y/C separate type)
  Y:1.0 Vp-p C:0.286Vp-p(BURST)
  75Ω unbalanced
  DVD / Y, Cr, Cb (RCA Type)
  Y: 1.0Vp-p Cr, Cb: 700mVp-p
  ATV / R,G,B,H,V (BNC Type)
  R,G,B: 700mVp-p 75Ω
  H,V: 3.0Vp-p 75Ω
- **Output Level** : VIDEO OUT JACK (RCA Type)
  1.0Vp-p 75Ω unbalanced
  : AUDIO OUT JACK (RCA Type)
  -4.7dBm 4.7kΩ unbalanced

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.

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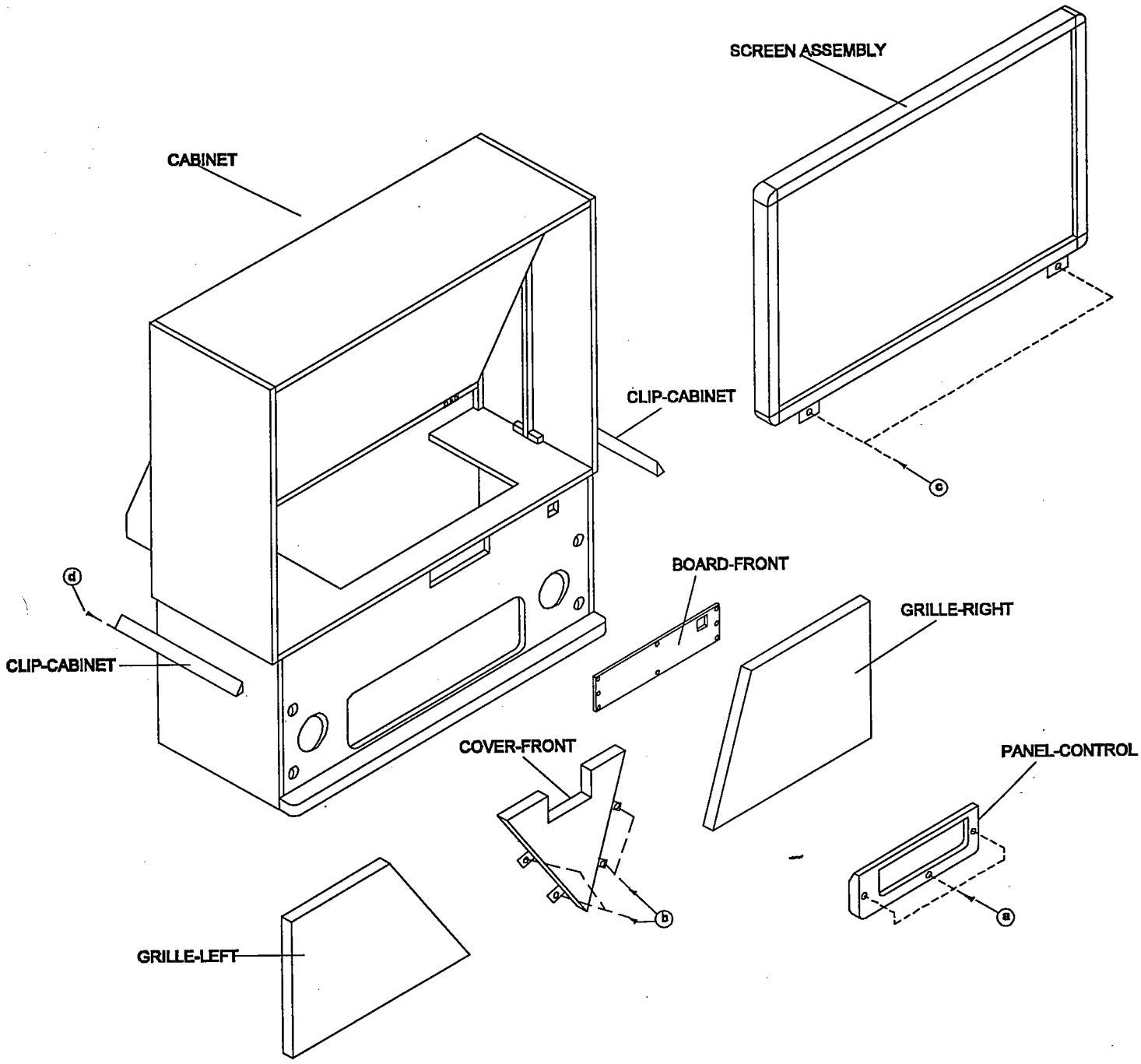
CABINET DISASSEMBLY (FRONT VIEW)

***Refer to PARTS LIST for Part Numbers**

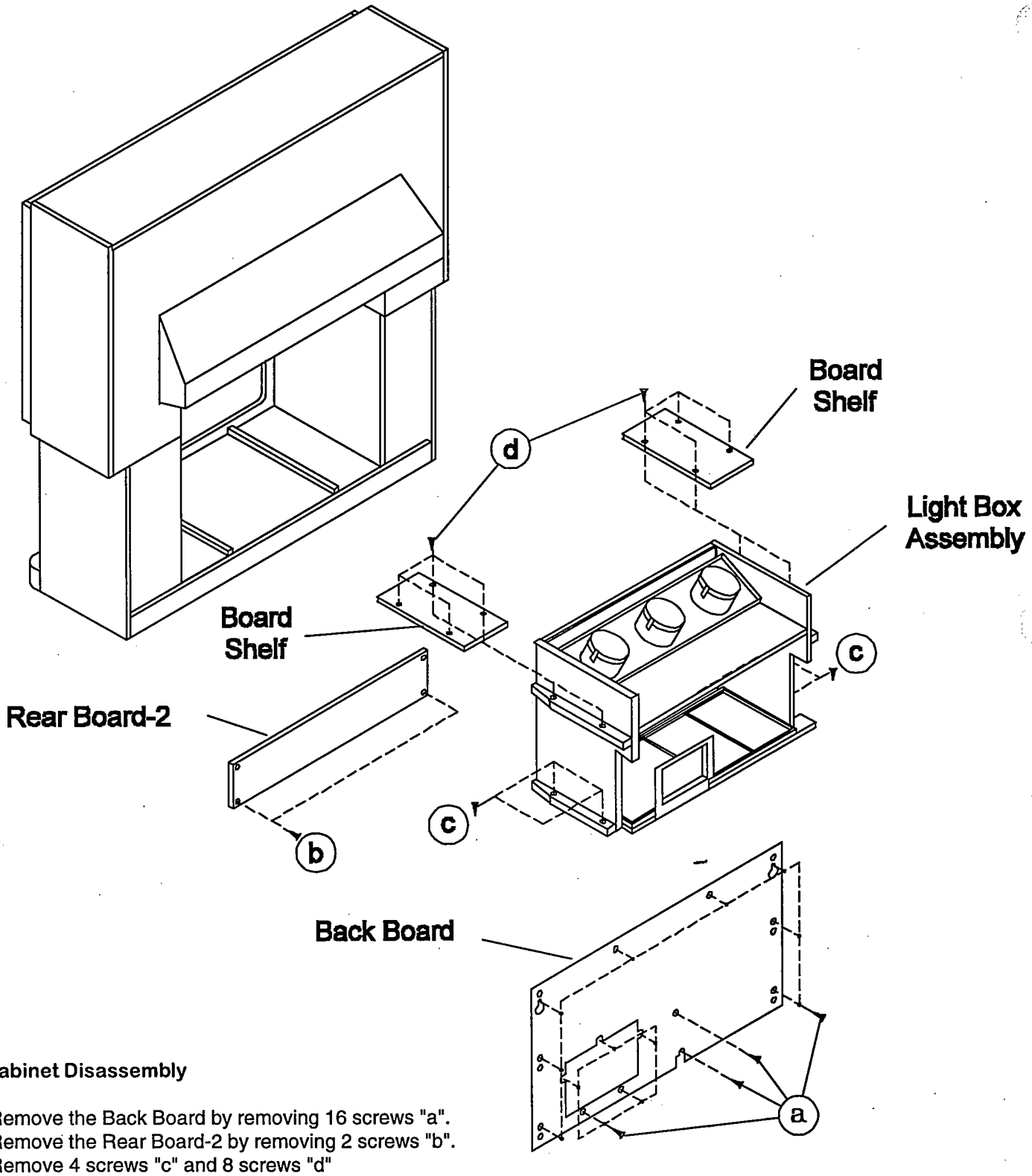


1. Front Cabinet Disassembly

1. Remove the Speaker Grilles by pulling forward.
2. Remove the Control Panel by removing 3 screws "a".
3. Remove the Front Cover by removing 4 screws "b".
4. Remove the Screen Assembly by removing 2 screws "c". Disconnect all cable harnesses between the Screen Assembly and the PCB-Signal.
5. Lift the Screen Assembly and pull up and away from the cabinet.

Note: *Removing the Cabinet Clips on either side of the cabinet should be done only during removal of the cabinet top. Refer to the Cabinet Separation procedure included in this Service Manual.*

CABINET DISASSEMBLY (REAR VIEW)



2. Rear Cabinet Disassembly

1. Remove the Back Board by removing 16 screws "a".
2. Remove the Rear Board-2 by removing 2 screws "b".
3. Remove 4 screws "c" and 8 screws "d" securing the Light Box Assembly and the Board Shelves.
4. Remove the shelves by lifting up and out.
5. Be certain that all cables and connectors between the Light Box Assembly and external items are disconnected (e.g. speaker plugs).
6. Slide the Light Box Assembly out of the cabinet.

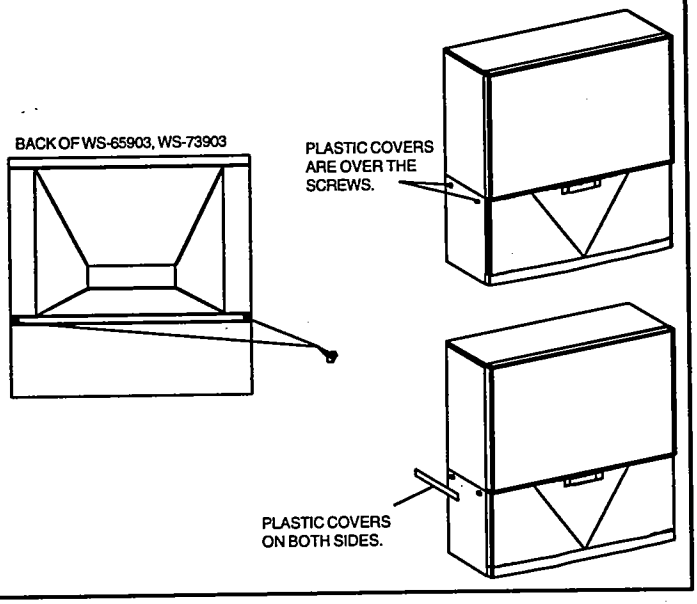
CABINET SEPARATION PROCEDURE

WS-65903, WS-73903, VS-70803, VS-80803

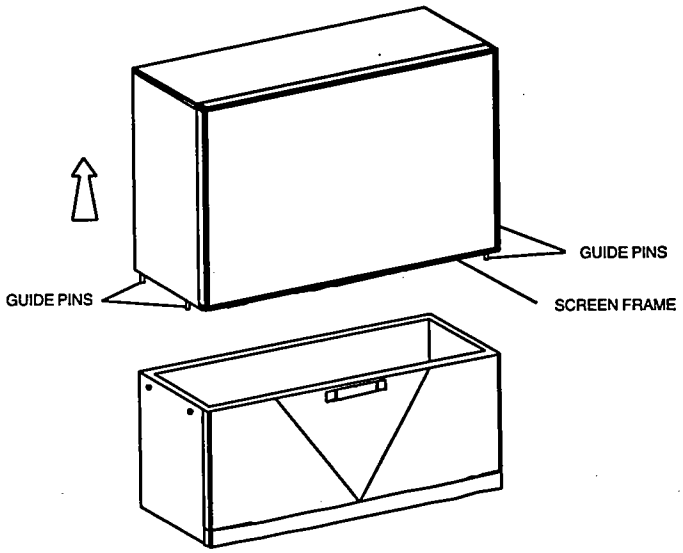
The above listed Mitsubishi Projection Television cabinets have been assembled in two pieces. These pieces may be separated to allow for easier delivery and set up. The instructions below show how to safely separate and re-attach the cabinet.

Note: *The guide pins located under the cabinet top are prone to breakage if mishandled. Be sure to keep the cabinet top straight when removing, setting down, and re-installing, being careful not to tilt backward or forward on the guide pins.*

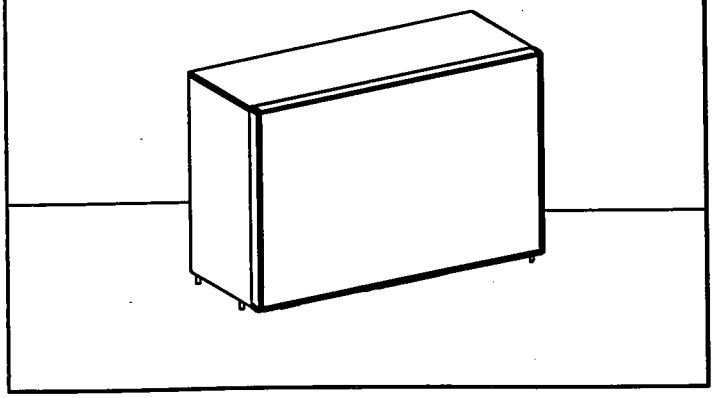
1. Remove the screw from each side of the TV back. Then, slide out the plastic screw cover from the TV side. Remove the screws that are under the plastic cover.



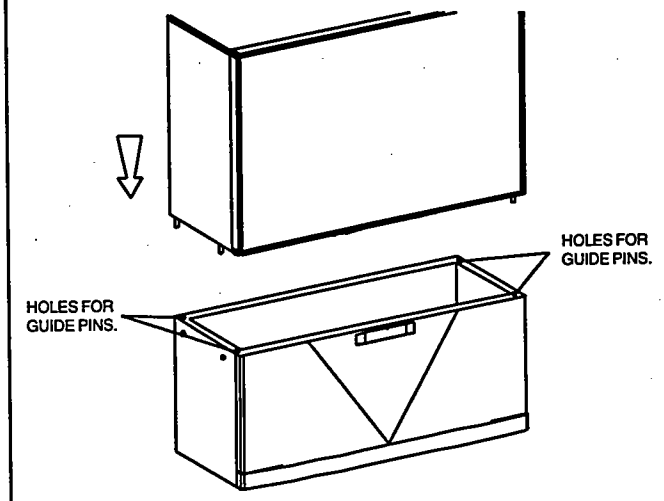
2. Being careful not to put your fingers under, or jar the screen frame, lift the top of the cabinet straight up until the guide pins have cleared the holes.



3. Carefully place the top of the cabinet onto the floor.



4. Once you have moved and positioned the bottom half of the cabinet to its final location, you may return the top half of the cabinet to its original location. Be sure you have aligned the pegs properly; keep your fingers clear of the edges being joined. Replace the screws and the plastic covers that were removed in step 1.



[AUDIO CIRCUIT] 1. Input Level

Adjustment purpose Set the level of the input signal for the multi channel sound circuit.

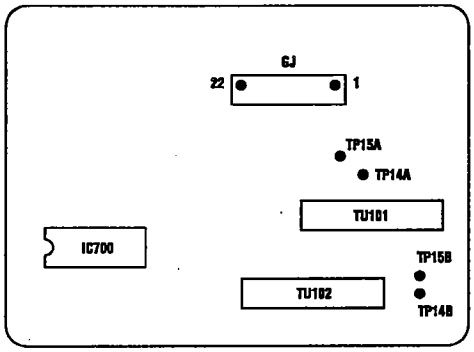
Symptom when incorrectly adjusted Distorted sound during a stereo broadcast.

Measuring Instrument	Oscilloscope
Test Point	TP-14A/B, TP-15A/B
Exit Trigger	-----
Measurement Range	DIV 50mV TIME 2ms
Input Signal	RF signal (Monaural Sound)
Input Terminal	RF IN Terminal

1. Supply an RF signal (monaural sound 400Hz 100% MOD).
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Set the adjustment function to "AUD" by pressing the "AUDIO" button.
5. Connect the oscilloscope to TP-14A, left audio output (TU-101).
6. Set the adjustment values to those shown in the table below by pressing the "VIDEO" and "ADJUST" buttons.
7. Confirm that the amplitude is 500 ± 20 mVrms (1.1Vp-p ± 0.1Vp-p)
8. Connect the oscilloscope to TP-15A, right audio output.
9. Confirm that the amplitude is 500 ± 20 mVrms (1.1Vpp ± 0.1Vp-p)
10. Repeat steps 5 through 9 using TP-14B and TP-15B (TU-102).
11. Press "ENTER" to write the adjustment data into memory.
12. Press the "MENU" button twice to terminate the circuit adjustment mode.

Note: *Adjustment item 2 (Stereo Separation) must be performed after this adjustment.*

PCB-SIGNAL (COMPONENT SIDE)



Adjustment Abbreviated Name	Initial Data
1 AGC	0
2 MON	8
3 SUR	8
4 VMX	8

[AUDIO CIRCUIT] 2. Separation

Adjustment purpose Adjust right and left separation.

Symptom when incorrectly adjusted Poor or no stereo separation.

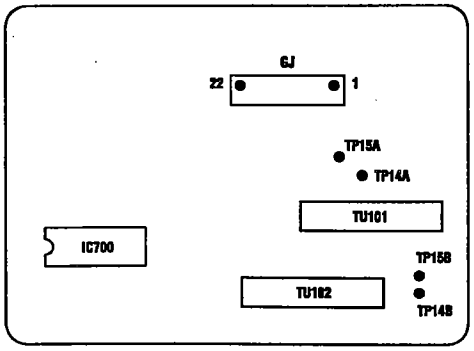
Measuring Instrument	Oscilloscope
Test Point	TP-14A, TP-15A
Exit Trigger	-----
Measurement Range	Division 10mV Time 2ms
Input Signal	RF signal (Stereo Sound)
Input Terminal	RF IN Terminal

Note: *This adjustment must follow item 1 (Input Level)*

1. Supply an RF signal (double-tone stereo 300Hz and 3KHz @30% MOD).
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Set the adjustment function to "AUD" by pressing the "AUDIO" button.
5. Connect the oscilloscope to TP-14A, left audio output (TU-101).
6. Using the "ADJUST" button, set the adjustment data to the values shown in the above table. (Item 1, Input Level)
7. Confirm the presence of the 300Hz signal.
8. Connect the oscilloscope to TP-15A, right audio output.
9. Confirm the presence of the 3KHz signal.
10. Repeat steps 5 through 9 using TP-14B and TP-15B (TU102).
11. Press "ENTER" to write the adjustment data into memory.
12. Press the "MENU" button twice to terminate the circuit adjustment mode.

Note: *The MCS circuitry is contained within the Tuners, TU101 and TU102.*
If the above checks and adjustments do not solve the existing problem, further troubleshooting of the Tuner and associated circuitry is required.

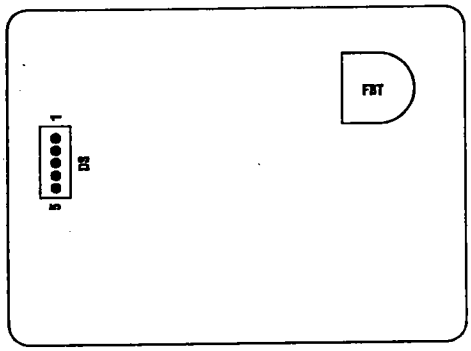
PCB-SIGNAL (COMPONENT SIDE)



[High Voltage Circuit]	**Adjustment purpose**	CRT anode voltage.
3. High Voltage Control	**Symptom when incorrectly adjusted**	Dark picture.

Measuring Instrument	DC Voltmeter
Test Point	- Lead: pin 5, connector DS + Lead: pin 2, connector DS
Exit Trigger	-----
Measurement range	----
Input Signal	VIDEO Signal (Monoscope)
Input Terminal	VIDEO IN terminal

. PCB-MAIN (COMPONENT SIDE)



Note: *This adjustment must follow item 4 (CRT Cut OFF, White Balance). Set the CONTRAST control to maximum and BRIGHTNESS control to center position..*

1. Supply a VIDEO signal (Monoscope).
2. Observe the DC voltage between pins 2 and 5 of connector DS. (Positive lead to pin 2).
3. Press the "MENU" button on a remote hand unit.
4. Press the numerical buttons 2-3-5-9-6 in sequence to change the screen to the Conv Misc function.
5. Select the adjustment item "0 HVOL" using the VIDEO button.
6. Set the adjustment data so the DC voltmeter reads 20.40 ± 0.01V using the "ADJUST" button.
7. Press "ENTER" to write the adjustment data into memory.
8. Press the "MENU" button twice to terminate the circuit adjustment mode.
9. Confirm the voltage of DS pin 2 does not vary more than 0.3V.
10. If voltage exceeds this limit, repeat adjustment procedure.

Note: *This adjustment will affect both the SD and HD set-up simultaneously.*

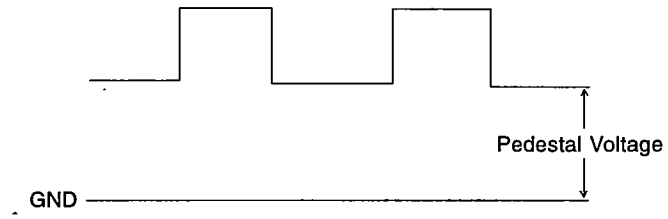
[CRT Circuit]	**Adjustment purpose**	To set the cutoff point of the three CRTs
4. CRT Cutoff, White Balance (SD Mode)	**Symptom when incorrectly adjusted**	Monochrome with color tint, or incorrect brightness in NTSC mode.

Measuring Instrument	DC Ammeter Oscilloscope
Test Point	TP6R, TP6G, TP6B
Exit Trigger	---
Measurement Range	Division 5V Time 2ms
Input Signal	VIDEO Signal
Input Terminal	Ext Input

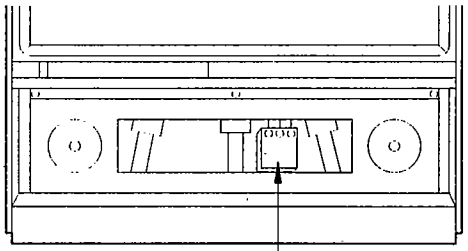
1. Select the EXT-1 input with no signal supplied.
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Adjustment function should be set to "VCJ".
5. Set the items shown in the Table to the given data values.
6. Observe the waveform at TP6R.
7. Adjust the SCREEN control (R) so that the pedestal voltage is 200V ± 1V.
8. Observe the waveform at TP6G.
9. Adjust the SCREEN control (G) so that the pedestal voltage is 200V ± 1V.
10. Observe the waveform at TP6B.
11. Adjust the SCREEN control (B) so that the pedestal voltage is 200V ± 1V.

Function Display		VCJ	
ITEM	**ABBREV.**	**Adjustment Name**	**Initial Data**
1	SCT	PICTURE GAIN	31
2	SBRT	SUB-BRIGHTNESS	20
5	SCON	SUB-CONTRAST	5
6	RDRH	RED DRIVE-HIGH	31
7	GDR	GREEN DRIVE	31
8	BDRH	BLUE DRIVE-HIGH	31
9	CTRH	RED CUT-OFF HIGH	31
10	CTGH	GREEN CUT-OFF HIGH	31
11	CTBH	BLUE CUT-OFF HIGH	31
12	RDRL	RED LOW DRIVE	25
13	BDRL	BLUE LOW DRIVE	15
14	CTRL	RED LOW CUT-OFF	31
15	CTGL	GREEN LOW CUT-OFF	10
16	CTBL	BLUE LOW CUT-OFF	10
18	BRT	BRIGHTNESS (CUSTOMER)	31
19	COL	COLOR GAIN CONTROL	*0

* Item 19, Color Gain Control, must be set to "0" for this adjustment.



12. Supply a VIDEO signal (full white raster)
13. Set adjustment data of "6 RDRH" and "8 BDRH" so that the white level is optimum at the center of the screen.
14. Measure the DC voltage drop across the cathode resistor as indicated in Table 1.
    Note: *The internal resistance of the ammeter must be 30Ω or less, and the length of the lead wires should be 12 inches or less. Measure the current in the three CRTs at the same time. Make sure that the current in the GREEN and BLUE CRTs does not exceed the values shown in Table 2. If excessive, readjust the current to the approximate values given in Table 3 by adjusting items "9 CTRH," "10 CTGH," and "11 CTBH."*
15. Set the adjustment data of "12 RDRL" and "13 BDRL" so that the white level is optimum at the center of the screen.
16. Observe the DC voltage at TP6R, TP6G, and TP6B. If the DC level has changed from that measured in steps 7-11, readjust the cutoff level by using "14 CTRL," "15 CTGL," and "16 CTBL."
    Note: *Do not adjust cutoff after making this adjustment.*
17. Press "ENTER" to write the adjustment data into memory.
18. Press the "MENU" button twice to terminate the circuit adjustment mode.



FRONT VIEW

* Using DC value measured in step 14, divide by resistor value (220Ω) to obtain CRT current value.

	Connections of Ampere Meter	
	Positive	**Negative**
R	R6R18 (+ SIDE)	R6R18 (- SIDE)
G	R6G18 (+ SIDE)	R6G18 (- SIDE)
B	R6B18 (+SIDE)	R6B18 (- SIDE)

Table 1

	Maximum Current
G	580µA
B	580µA

Table 2

Current Values		
R	G	B
270µA	540µA	540µA

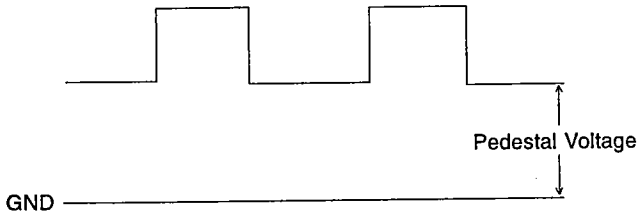
Table 3

[CRT Circuit]	**Adjustment purpose**	To set the cutoff point of the three CRTs
5. CRT Cutoff, White Balance (HD Mode)	**Symptom when incorrectly adjusted**	Monochrome with color tint, or incorrect brightness in HD mode.

Measuring Instrument	Oscilloscope
Test Point	TP6R, TP6G, TP6B
Exit Trigger	---
Measurement Range	Division 5V Time 2ms
Input Signal	HD Generator
Input Terminal	RGB Input

Note: *This adjustment must follow item 4, CRT Cutoff, White Balance (NTSC Mode)*

1. Supply a VIDEO signal (full white raster) using an HD generator .
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Adjustment function should be set to "VCJ".
5. Set adjustment data of "6 RDRH" and "8 BDRH" so that the white level is optimum at the center of the screen.
6. Observe the waveform at TP6R, TP6G, and TP6B. If the pedestal voltage has changed from that shown in Table 1, readjust the cutoff level by using "14 CTRL," "15 CTGL," and "16 CTBL."
   Note: *Do not adjust cutoff after making this adjustment.*
7. Press "ENTER" to write the adjustment data into memory.
8. Press the "MENU" button twice to terminate the circuit adjustment mode.



CRT Voltage		
R	**G**	**B**
200V ± 1V	200V ± 1V	200V ± 1V

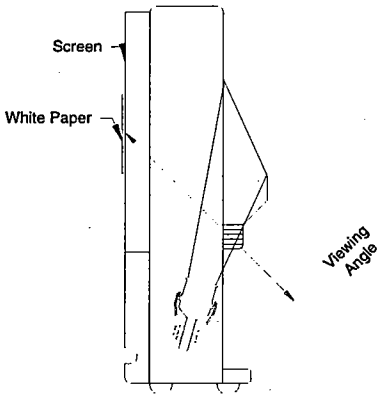
Table 1

Function Display	VCJ		
ITEM	**ABBREV.**	**Adjustment Name**	**Initial Data**
1	SCT	PICTURE GAIN	31
2	SBRT	SUB-BRIGHTNESS	20
5	SCON	SUB-CONTRAST	5
6	RDRH	RED DRIVE-HIGH	31
7	GDR	GREEN DRIVE	31
8	BDRH	BLUE DRIVE-HIGH	31
9	CTRH	RED CUT-OFF HIGH	31
10	CTGH	GREEN CUT-OFF HIGH	31
11	CTBH	BLUE CUT-OFF HIGH	31
12	RDRL	RED LOW DRIVE	25
13	BDRL	BLUE LOW DRIVE	15
14	CTRL	RED LOW CUT-OFF	31
15	CTGL	GREEN LOW CUT-OFF	10
16	CTBL	BLUE LOW CUT-OFF	10
18	BRT	BRIGHTNESS (CUSTOMER)	31
19	COL	COLOR GAIN CONTROL	*0

* Item 19, Color Gain Control, must be set to "0" for this adjustment.

[Focus Circuit] 6. Lens Focus	**Adjustment purpose**	The best resolution of the picture.
	Symptom when incorrectly adjusted	Blurred picture.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	Video Signal (Monoscope)
Input Terminal	VIDEO IN Terminal



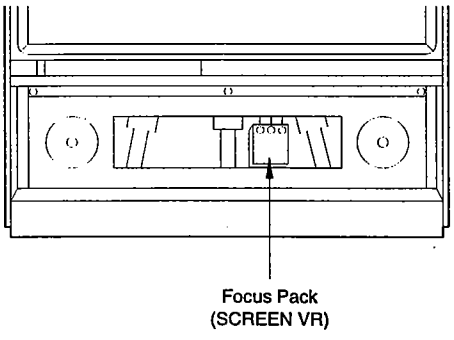
Note: *This adjustment must follow item 7 (Electrostatic Focus). Perform this adjustment for RED, GREEN, and BLUE monochrome pictures.*

1. Supply a VIDEO signal (Monoscope).
2. A green Crosshatch is superimposed over the Monoscope pattern.
3. Produce a monochrome picture:
   a) Press the "MENU" button on a remote hand unit.
   b) Press the buttons 2-3-5-9 then press the button specified in the table below to select each color.
4. Adjust the position of the lens for the best picture resolution.
   NOTE:
   Attach a white paper to the screen center. During adjustment, observe the picture on the screen from inside for easier adjustment.
5. Display the original picture and press "MENU" twice.

Monochrome Picture	Remote Hand Unit Button
RED	1
GREEN	2
BLUE	3

[Focus Circuit] 7. Electrostatic Focus	**Adjustment purpose**	For best resolution of the picture.
	Symptom when incorrectly adjusted	Out of focus picture.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	Video Signal (Monoscope)
Input Terminal	VIDEO IN Terminal



Note: *This adjustment must follow item 10 (Sub Contrast). If you replace the CRT, this adjustment must follow item 6, (Lens Focus). Perform this adjustment respectively for RED, GREEN, and BLUE monochrome pictures.*

1. Supply a VIDEO signal (Monoscope).
2. Press the "A/V RESET" button in the control panel to reset all VIDEO FUNCTIONS.
3. Produce a monochrome picture.
   a) Press the "MENU" button on a remote hand unit.
   b) Press the buttons 2-3-5-9 then press the button specified in the table below to select each color.
4. Adjust the FOCUS VR on the focus pack so the sharpness of the upper area of the screen is optimum.
5. Display the original picture and press "MENU" twice.

Monochrome Picture	Remote Hand Unit Button
RED	1
GREEN	2
BLUE	3

[Focus Circuit]	**Adjustment purpose**	The best resolution of the picture.
8. Dynamic Focus	**Symptom when incorrectly adjusted**	Blurred picture in corners.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	Video Signal (Monoscope)
Input Terminal	VIDEO IN Terminal

Note: *This adjustment must follow item 7 (Electrostatic Focus).*

1. Supply a VIDEO signal (Monoscope).
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons 2-3-5-9-6 in sequence to set the adjustment mode to "CONV MISC".
4. Use the "VIDEO" button to scroll to adjustment item "4 FPHS".
5. Confirm that the value is set to "198"
4. Use the "VIDEO" button to scroll to adjustment item "6 DPHS".
5. Confirm that the value is set to "20"
6. Press "MENU" twice to return to the main picture.
7. Press the "MENU" button again.
8. Press the buttons 2-3-5-9 in sequence to set the adjustment mode to "CONV GREEN".
9. Using the "AUDIO" button, select function "CONV DF".
10. Use the "ADJUST" buttons to set the values shown in the table below. (Also shown on page 22)
11. Confirm that the focus at the four corners of the Monoscope pattern is at optimum.
12. Press "ENTER' to save the data changes into memory.
13. Press "MENU" twice to return to the main picture.

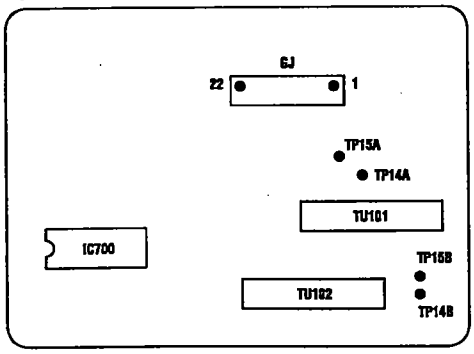
Adjustment Abbreviated Name	Initial Data
0 DFH	250
1 DFV	60

[Video Circuit]	**Adjustment purpose**	Picture Luminance.
9. Main/Sub Y-Gain	**Symptom when incorrectly adjusted**	Excessive or insufficient brightness.

Measuring Instrument	Oscilloscope
Test Point	GJ connector pins 1, 12
Exit Trigger	-----
Measurement Range	-----
Input Signal	Video Signal (Color Bars)
Input Terminal	VIDEO IN Terminal

1. Supply a Color Bar signal to an External Input.
2. Connect an oscilloscope to connector GJ, pin 12.
3. Press "MENU 2 3 5 7" in sequence to activate the Adjustment Mode.
4. Using the "AUDIO" button, select the "MAIN MATRIX" function.
5. Select item "3 YDRM" using the "VIDEO" button.
6. Set the data so the luminance amplitude is 0.7 ±0.035 Vp-p, using the "ADJUST" buttons.
7. Select the Color Bar signal for the PIP input.
8. Connect an oscilloscope to connector GJ, pin 1.
9. Using the "AUDIO" button, select the "SUB MATRIX" function .
10. Select item "3 YDRS" using the "VIDEO" button.
11. Set the data so the luminance amplitude is 0.7 ±0.035 Vp-p, using the "ADJUST" buttons.
12. Press "ENTER" to write the data into memory.
13. Press "MENU" twice to return to the main picture.

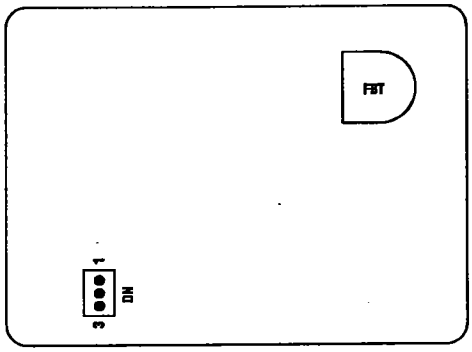
PCB-SIGNAL (COMPONENT SIDE)



[Video Circuit]	**Adjustment purpose** To set the beam current to its optimum value.
10. Sub Contrast (SD & HD Modes)	**Symptom when incorrectly adjusted** Excessive or insufficient contrast.

Measuring Instrument	DC milliammeter
Test Point	+ Lead: pin 2 of connector DN - Lead: pin 1 of connector DN
Exit Trigger	-----
Measurement Range	3mA
Input Signal	RF Signal (Gray scale 87.5% MOD)
Input Terminal	RF IN Terminal

PCB-MAIN (COMPONENT SIDE)

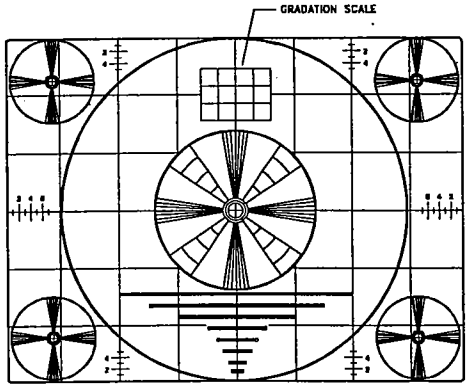


Note: *This adjustment must follow item 11 (Black Level).*
Preheat the set for two minutes or more.

1. Supply an RF signal (gray scale 87.5% MOD) with the luminance output level of the pattern generator set at 50%.
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Adjustment function should be set to "VCJ ".
5. Select the adjustment item "1 SCT" using the "VIDEO" button.
6. Measure the current at pins 1 and 2 of connector DN (Plus lead to pin 2).
7. Using the "ADJUST" button, set the adjustment data so the DC milliammeter reads 900 ± 20µA for a 5 step gray scale pattern. (*Make note of the set value as it will be needed for the following steps*)
8. Remove the DC meter.
9. Press the "INFO" key on the remote to change to the HD alignment mode. (No HD signal input is required)
10. Set "1 SCT" to 5 steps *below* the value set in step 7.
11. Press "ENTER" to write the adjustment data into memory.
12. Press the "MENU" button twice to terminate the circuit adjustment mode.

[Video Circuit]	**Adjustment purpose** Picture Luminance.
11. Black Level (SD & HD Modes)	**Symptom when incorrectly adjusted** Excessive or insufficient brightness.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	Video Signal (Monoscope)
Input Terminal	VIDEO IN Terminal



Note: *This adjustment must follow item 4 (CRT Cutoff, White Balance).*

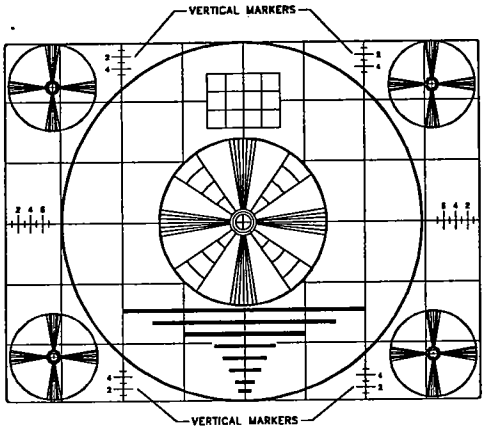
1. Supply a VIDEO signal (Monoscope).
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Adjustment function should be set to "VCJ ".
5. Select the adjustment item "2 SBRT" using the "VIDEO" button.
6. Observe the gradation pattern inside a Monoscope signal and set the adjustment data so that both levels, at the 10% and 0% areas of the gradation pattern, are the same (black level 8%) using the "ADJUST" button.
7. Press the "INFO" key on the remote to change to the HD alignment mode. (No HD signal input is required)
8. Set "2 SBRT" to the same value as was set in step 6.
9. Press "ENTER" to write the adjustment data into memory.
10. Press the "MENU" button twice to terminate the circuit adjustment mode.

40%	30%	20%	10%
50%	0%	0%	0%
60%	70%	80%	90%

GRADATION SCALE

[Deflection Circuit]	**Adjustment purpose**	To set vertical linearity and height.
12. Vertical Linearity & Height	**Symptom when incorrectly adjusted**	Incorrect vertical linearity and height.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	VIDEO Signal (Monoscope)
Input Terminal	VIDEO IN Terminal



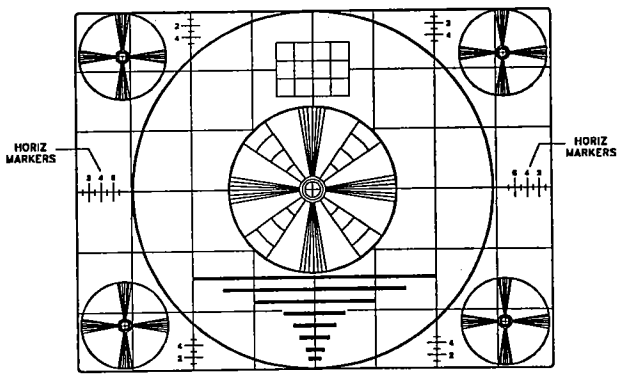
1. Supply a VIDEO signal (Monoscope)
2. Press the "MENU" button on a remote hand unit.
3. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
4. Adjustment function should be set to "Deflection Jungle".
5. Select adjustment item "7 VHGT" using the "VIDEO" button. Adjust so that the sum of the vertical markers equals 3.6, using the "ADJUST" button.
6. Select adjustment item "8 VLIN" using the "VIDEO" button
7. Set the adjustment data so that the largest circle is round using the "ADJUST" button.
8. Supply a VIDEO signal (Crosshatch).
9. Select adjustment item "9 VSCN" (Vertical S) using the "VIDEO" button.
10. Using the "ADJUST" button, set the adjustment data so that the height of the squares in the Crosshatch pattern are equal at the top, bottom and middle of the screen.
11. Press "ENTER" to write the adjustment data into memory.
12. Press the "MENU" button twice to terminate the circuit adjustment mode.

[Deflection Circuit]	**Adjustment purpose**	To set the width of the picture.
13. Horizontal Width	**Symptom when incorrectly adjusted**	Picture compressed or expanded horizontally.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	VIDEO Signal (Monoscope)
Input Terminal	VIDEO IN Terminal

Note: *This adjustment must follow item 4 (CRT Cutoff, White Balance) and item 3 (High Voltage Control). Perform this adjustment alternately with item 15 (Geometry Correction).*

1. Supply a VIDEO signal (Monoscope).
2. Cover the RED and BLUE lenses, producing a GREEN monochrome picture.
3. Press the "MENU" button on a remote hand unit.
4. Press the numerical buttons 2-3-5-7 in sequence to set the adjustment function to "Deflection Jungle."
5. Select adjustment item "1 HWID" using the "VIDEO" button.
7. Set the adjustment data so the sum of the horizontal width markers is 6.0 using the "ADJUST" button.
8. Press the "MENU" button twice to terminate the adjustment mode.



[CRT]

14. Static Convergence (SD & HD Modes)

Adjustment purpose To correct convergence caused by installation direction.

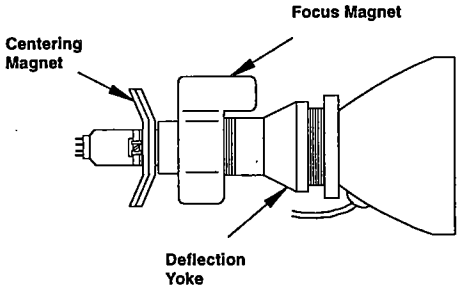
Symptom when incorrectly adjusted Color edging.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	SD/HD Generator
Input Terminal	RGB Input

1. Degauss the shield cover and bracket unit of the CRT assembly and chassis sheet metal.
2. Supply a VIDEO signal (Crosshatch) from an NTSC generator.

   Note: Use an HD Crosshatch generator connected to the RGB input when adjusting for the HD mode.

3. Press the "MENU" button on a remote hand unit.
4. Press the numerical buttons 2-3-5-7 in sequence to change the screen to the circuit adjustment mode.
5. Using the "AUDIO" button, select the function "Deflection Jungle".
6. Select adjustment item "8 VLIN" using the "VIDEO" button.
7. Adjust so that the vertical linearity is roughly correct using the "ADJUST" button.
8. Select adjustment item "14 HPOS" and confirm that it is set to the value shown. (Table 1 below) Press "ENTER" to save the changes.
9. Press the "MENU" button twice to exit this alignment section.
10. Then, press the buttons 2-3-5-9-5 in sequence to change to the "CONV GREEN" adjustment section.
11. Adjust items "0 HSTA" and "4 VSTA" so that all green lines are straight.
12. Using the "AUDIO" button, select the functions "CONV RED" and "CONV BLUE." Adjust items "0 HSTA" and "5 VSTA" so that all red and blue lines are straight.
13. After confirmation, and while still in this mode, rotate the deflection Yoke and Centering Magnet on the RED CRT, so that the center horizontal line of the RED Crosshatch signal is converged on the GREEN signal, producing a yellow horizontal line.
14. Rotate the deflection Yoke and Centering Magnet on the BLUE CRT, so that the center horizontal line of the BLUE Crosshatch signal is converged on the GREEN signal to produce a white horizontal line.
15. Press the "MENU" button twice to terminate the circuit adjustment mode. The data values are stored automatically.
16. Repeat steps 2-15 using an HD Crosshatch signal connected to the RGB input.



Function Display		DEFLECTION JUNGLE			
ITEM	**ABBREV.**	**Adjustment Name**	**Range**	**Initial SD**	**Initial HD**
14	HPOS	HORIZONTAL POSITION	0~63	34	35

Table 1

[Geometry Correction Circuit]	**Adjustment purpose** To correct picture geometry errors.
15. Geometry Correction	**Symptom when incorrectly adjusted** Picture geometry out of alignment.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement range	-----
Input Signal	Video Signal (Crosshatch)
Input Terminal	VIDEO IN Terminal

Note: *This adjustment must follow item 3 (High Voltage Control)*

1. Power the unit on and input a video signal (Crosshatch pattern) using a pattern generator capable of supplying both SD and HD signals. Connect this to the RGB input. Use the SD signal.
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons 2-3-5-7 in sequence to access the adjustment mode "Deflection Jungle."
4. Using the "ADJUST" buttons, set the data of the items below "Initial SD," so that all the horizontal and vertical lines are straight and spacing is linear.
5. Repeat step 4.
6. Press "Menu" twice to terminate the circuit adjustment mode. The data values are stored automatically.
7. Repeat steps 2-6 using an HD signal. Ensure that all items shown conform to the values listed under "Initial HD."

Note: *Adjustment 16 (Dynamic Convergence) must be performed immediately after this adjustment.*

Function Display		DEFLECTION JUNGLE			
ITEM	**ABBREV.**	**Adjustment Name**	**Range**	**Initial SD**	**Initial HD**
1	HWID	HORIZONTAL WIDTH	0-63	32	25
2	HKEY	HORIZONTAL KEYSTONE	0-63	31	31
3	EWPT	EW-PCC ON TOP	0-63	31	31
4	EWCT	CORNER PCC ON TOP	0-63	31	31
5	EWPB	EW-PCC ON BOTTTOM	0-63	31	31
6	EWCB	CORNER PCC ON BOTTOM	0-63	31	31
7	VHGT	VERTICAL HEIGHT	0-63	31	31
8	VLIN	VERTICAL LINEARITY	0-15	7	7
9	VSCN	VERTICAL S-CORRECTION	0-15	7	7
10	VLNT	VERTICAL LINEARITY ON TOP	0-15	0	0
11	VLNB	VERTICAL LINEARITY ON BOTTOM	0-15	0	0

[Convergence Circuit]	**Adjustment purpose** To correct and fine tune Red, Green, and Blue geometry.
16. Dynamic Convergence (Coarse Alignment - SD)	**Symptom when incorrectly adjusted** Geometry out of alignment.

Measuring Instrument	
Test Point	----
Exit Trigger	----
Measurement Range	----
Input Signal	None
Input Terminal	Ext-1

Note: *This adjustment must follow item 15 (Geometry Correction)*

1. Power the unit on and set to EXT-1 input, no signal.
2. Press the "MENU" button on a remote hand unit.
3. Select "SETUP" then "A/V NETWORK".
4. Confirm that "A/V NETWORK" is set to "OFF".
5. Press "MENU" twice to return to blank screen.
6. Press "MENU" again.
7. Press the buttons 2-3-5-9 in sequence to access the screen adjustment mode. A green Crosshatch signal should be displayed.
8. Select "CONV MISC" mode by pressing the number "6" button. The test pattern should vanish leaving only the OSD.

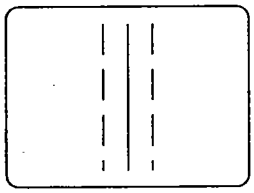
Note: *The test pattern is suppressed for item "0 HVOL" in the "CONV MISC" menu only. This suppression is so that the beam current is reduced to minimum while the high voltage is adjusted. For all other items, the test pattern is visible.*

9. Confirm that the values are set as shown in the "CONV MISC" table on page 33.
10. After confirmation, and while still in this mode, press the number "5" button to enter the "CONV GREEN" adjustment section.
11. Using the "ADJUST" buttons, set the data of the items below so that all the green horizontal and vertical lines are straight and spacing is linear. (Table page 33)
12. Using the "AUDIO" button, select "RED CONV" and then "BLUE CONV". Set the data of the items below to obtain a coarse alignment with the green. (Refer to the table on page 33 for data values)
13. Press "Menu" twice to terminate the circuit adjustment mode. The data values are stored automatically.

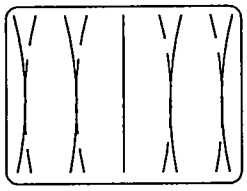
Note: *Adjustment 18 (Dynamic Convergence-Fine Alignment) must be performed immediately after this adjustment.,*

GREEN CONVERGENCE

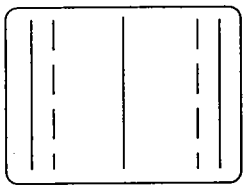
0 HSTA



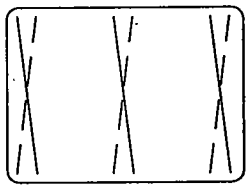
1 SPCC



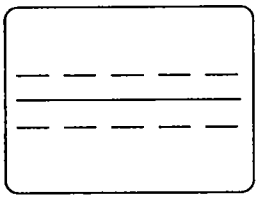
2 HWID



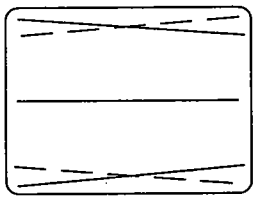
3 SKEW



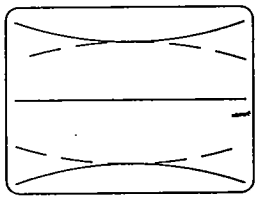
4 VSTA



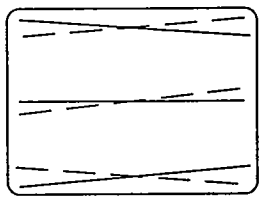
5 VKEY



6 TBPC

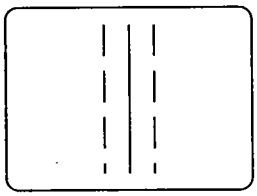


7 TILT

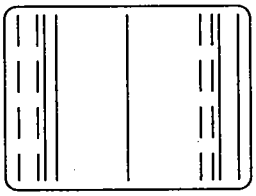


RED & BLUE CONVERGENCE

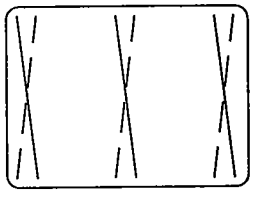
0 HSTA



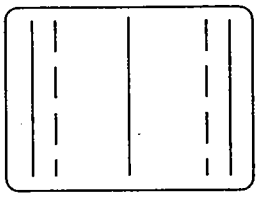
1 HLIN



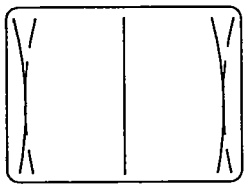
2 SKEW



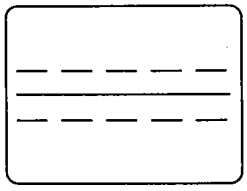
3 HWID



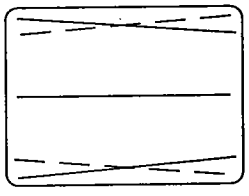
4 HSBW



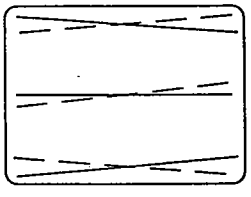
5 VSTA



6 VKEY



7 TILT



[Convergence Circuit]	**Adjustment purpose**	To correct color mis-convergence in RED, GREEN, and BLUE.
17. Dynamic Convergence (Coarse Alignment - HD)	**Symptom when incorrectly adjusted**	Colors mis-converged.

Measuring Instrument	
Test Point	----
Exit Trigger	----
Measurement Range	----
Input Signal	*HD Generator
Input Terminal	RGB Input

* If an HD Generator is not available, any HD signal source can be used. Simplydisconnect the R, G, and B input cables so the HD sync alone is provided. Then, proceed with the adjustment.

Note: *This adjustment must follow item 15 (Geometry Correction)*

1. Power the unit on and set to the RGB input.
2. Press the "MENU" button on a remote hand unit.
3. Select "SETUP" then "A/V NETWORK".
4. Confirm that "A/V NETWORK" is set to "OFF".
5. Press "MENU" twice to return to blank screen.
6. Press "MENU" again.
7. Press the buttons 2-3-5-9 in sequence to access the screen adjustment mode. A green Crosshatch signal should be displayed. Press the "INFO" button to switch to the HD alignment mode.
8. Select "CONV MISC" mode by pressing the number "6" button. The test pattern should vanish leaving only the OSD.

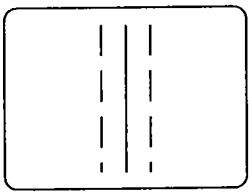
Note: *The test pattern is suppressed for item "0 HVOL" in the "CONV MISC" menu only. This suppression is so that the beam current is reduced to minimum while the high voltage is adjusted. For all other items, the test pattern is visible.*

9. Confirm that the values are set as shown in the "CONV MISC" table on page 33.
10. After confirmation, and while still in this mode, press the number "5" button to enter the "CONV GREEN" adjustment section.
11. Using the "ADJUST" buttons, set the data of the items below so that all the green horizontal and vertical lines are straight and spacing is linear. (Table page 33)
12. Using the "AUDIO" button, select "RED CONV" and then "BLUE CONV". Set the data of the items below to obtain a coarse alignment with the green. (Refer to the table on page 33 for data values)
13. Press "Menu" twice to terminate the circuit adjustment mode. The data values are stored automatically.

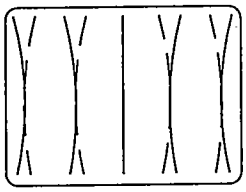
Note: *Adjustment 19 (Dynamic Convergence-Fine Alignment) must be performed immediately after this adjustment.*

GREEN CONVERGENCE

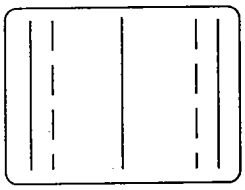
0 HSTA



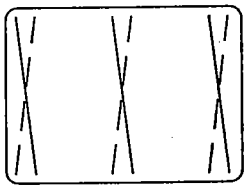
1 SPCC



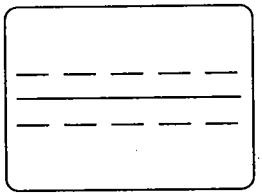
2 HWID



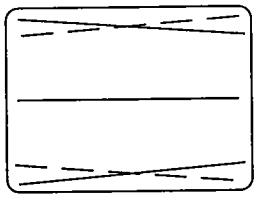
3 SKEW



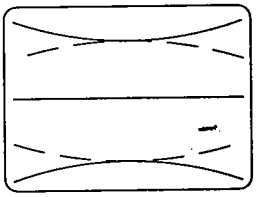
4 VSTA



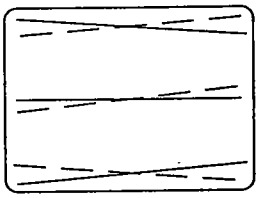
5 VKEY



6 TBPC

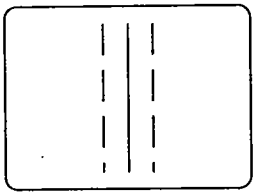


7 TILT

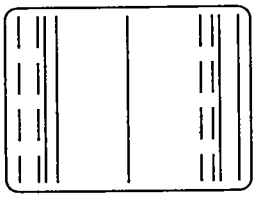


RED & BLUE CONVERGENCE

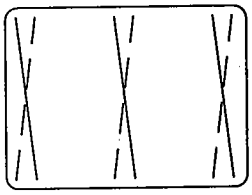
0 HSTA



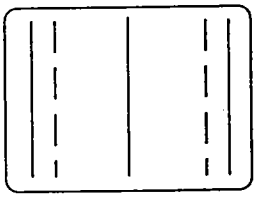
1 HLIN



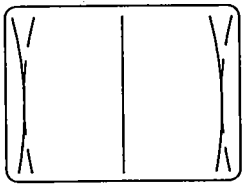
2 SKEW



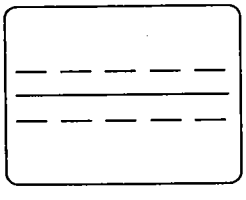
3 HWID



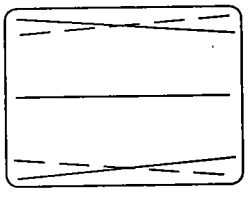
4 HSBW



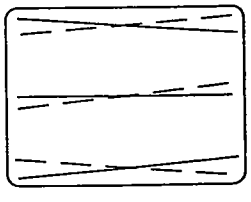
5 VSTA



6 VKEY



7 TILT

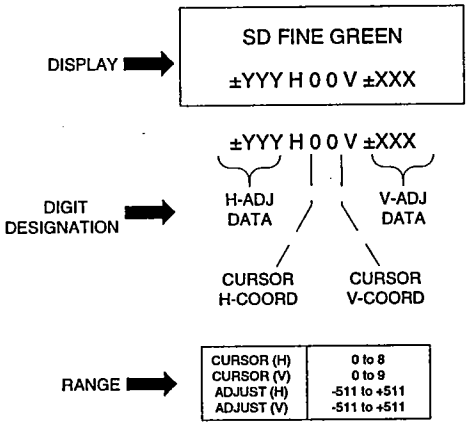


[Convergence Circuit]	**Adjustment purpose** To correct color mis-convergence in RED, GREEN, and BLUE.
18. Dynamic Convergence (Fine Alignment - SD)	**Symptom when incorrectly adjusted** Colors mis-converged.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	None
Input Terminal	Ext-1

MODE	CONTROL	ACTION
MOVE	ADJ UP	CURSOR UP
	ADJ DOWN	CURSOR DOWN
	ADJ LEFT	CURSOR LEFT
	ADJ RIGHT	CURSOR RIGHT
ADJUST	ADJ UP	VERTICAL PLUS
	ADJ DOWN	VERTICAL MINUS
	ADJ LEFT	HORIZONTAL PLUS
	ADJ RIGHT	HORIZONTAL MINUS

Table A



Note: *This adjustment must follow item 14 (Static Convergence) and item 15 (Geometry Correction).*
Dynamic convergence should not be attempted until the static convergence has been properly adjusted. (including centering adjustment, if required).

1. Power the unit on and set to EXT-1 input, no signal.
2. Press the "MENU" button on a remote hand unit.
3. Select "SETUP" then "A/V NETWORK".
4. Confirm that the "A/V NETWORK" is set to "OFF".
5. Press "MENU" twice to return to blank screen.
6. Press "MENU" again.
7. Press the numerical buttons 2-3-5-9-4 in sequence to change the screen to the adjustment mode.
8. A convergence grid pattern will appear. The display "SD FINE GREEN" accompanied by a blinking cursor is visible on the pattern. (Figure 1 below)
9. Adjust the convergence according to the steps described below:
   a. Press the "ADJUST" button to select between the 64 screen adjust points.

Note: *As shown in Figure 2, ninety (90) possible adjustment points can be accessed, however, only sixty-four (64) are contained within the screen display.*

   b. Press "ENTER" to switch between the "MOVE" and "ADJUST" modes.
   c. Press the "ADJUST UP/DOWN/LEFT/RIGHT buttons to change the adjustment data.
   d. Press the "AUDIO" button to switch between Green, Red, and Blue.

Note: *In the "MOVE" mode, the "ADJUST" buttons serve to move the cursor. In the "ADJUST" mode, they are used to change the adjustment data. (Refer to Table A)*

10. The range of data values is between -511 and +511. Set all three colors to optimum alignment.
11. Confirm no mis-convergence occurs at the center of the screen. Use one of the following methods to correct center mis-convergence:
    a. Use the customer convergence controls.
    b. Return to Item 15 "Geometry Correction" and adjust "0 HSTA" and "5 VSTA" for both the Red and the Blue. **Do not adjust the Green.**
12. Press the "MENU" button twice to terminate the dynamic adjustment mode. The data changes are stored automatically.

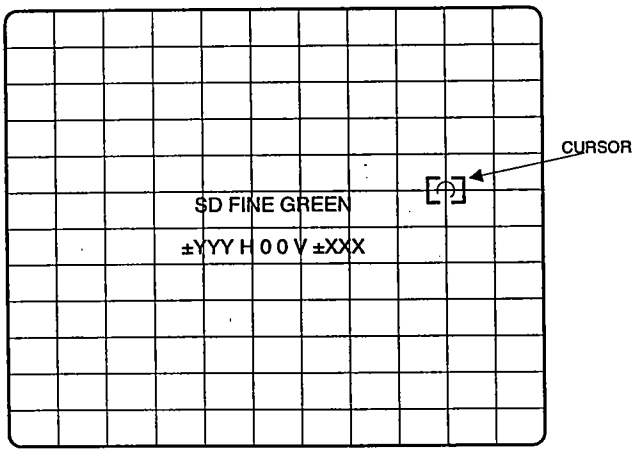


Figure 1

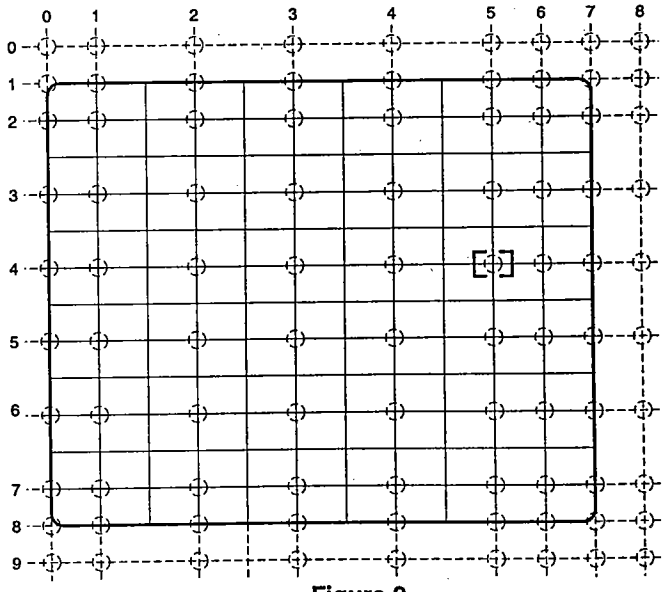


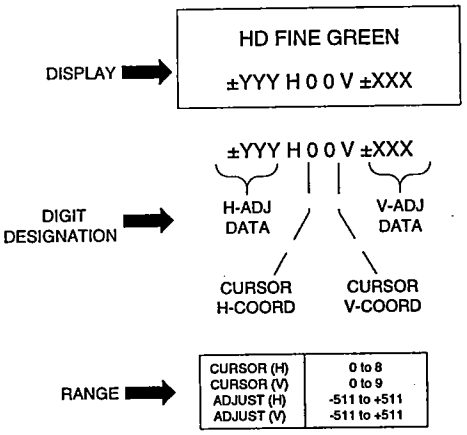
Figure 2

[Convergence Circuit]	**Adjustment purpose**	To correct color mis-convergence in RED, GREEN, and BLUE.
19. Dynamic Convergence (Fine Alignment - HD)	**Symptom when incorrectly adjusted**	Colors mis-converged.

Measuring Instrument	-----
Test Point	-----
Exit Trigger	-----
Measurement Range	-----
Input Signal	HD Generator
Input Terminal	RGB Input

MODE	CONTROL	ACTION
MOVE	ADJ UP	CURSOR UP
	ADJ DOWN	CURSOR DOWN
	ADJ LEFT	CURSOR LEFT
	ADJ RIGHT	CURSOR RIGHT
ADJUST	ADJ UP	VERTICAL PLUS
	ADJ DOWN	VERTICAL MINUS
	ADJ LEFT	HORIZONTAL PLUS
	ADJ RIGHT	HORIZONTAL MINUS

Table A



Note: *This adjustment must follow item 14 (Static Convergence) and item 15 (Geometry Correction).*
Dynamic convergence should not be attempted until the static convergence has been properly adjusted. (including centering adjustment, if required).

1. Power the unit on and set to the RGB input.

Note: *If an HD Generator is not available, any HD signal source can be used. Simply disconnect the R, G, and B input cables so the HD sync alone is provided. Then, proceed with the adjustment.*

2. Press the "MENU" button on a remote hand unit.
3. Select "SETUP" then "A/V NETWORK".
4. Confirm that the "A/V NETWORK" is set to "OFF".
5. Press "MENU" twice to return to blank screen.
6. Press "MENU" again.
7. Press the numerical buttons 2-3-5-9-4 in sequence to change the screen to the adjustment mode. Press the "INFO" button to switch to the HD alignment mode.
8. A convergence grid pattern will appear. The display "HD FINE GREEN" accompanied by a blinking cursor is visible on the pattern. (Figure 1 below)
9. Adjust the convergence according to the steps described below:
   a. Press the "ADJUST" button to select between the 64 screen adjust points.

Note: *As shown in Figure 2, ninety (90) possible adjustment points can be accessed, however, only sixty-four (64) are contained within the screen display.*

   b. Press "ENTER" to switch between the "MOVE" and "ADJUST" modes.
   c. Press the "ADJUST UP/DOWN/LEFT/RIGHT buttons to change the adjustment data.
   d. Press the "AUDIO" button to switch between Green, Red, and Blue.

Note: *In the "MOVE" mode, the "ADJUST" buttons serve to move the cursor. In the "ADJUST" mode, they are used to change the adjustment data. (Refer to Table A)*

10. The range of data values is between -511 and +511. Set all three colors to optimum alignment.
11. Confirm no mis-convergence occurs at the center of the screen. Use one of the following methods to correct center mis-convergence:
    a. Use the customer convergence controls.
    b. Return to Item 15 "Geometry Correction" and adjust "0 HSTA" and "5 VSTA" for both the Red and the Blue. **Do not adjust the Green.**
12. Press the "MENU" button twice to terminate the dynamic adjustment mode. The data changes are stored automatically.

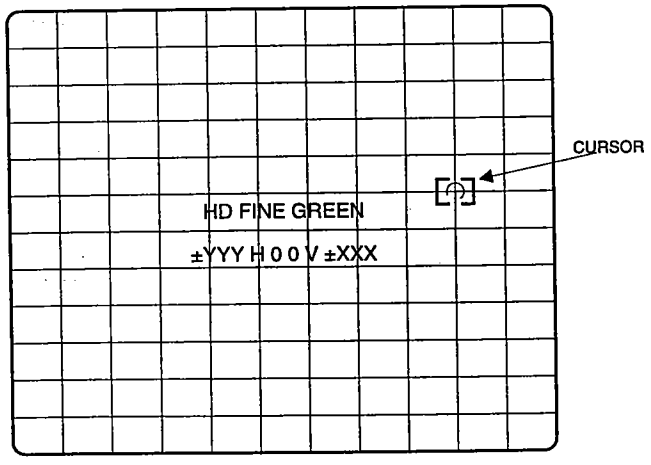


Figure 1

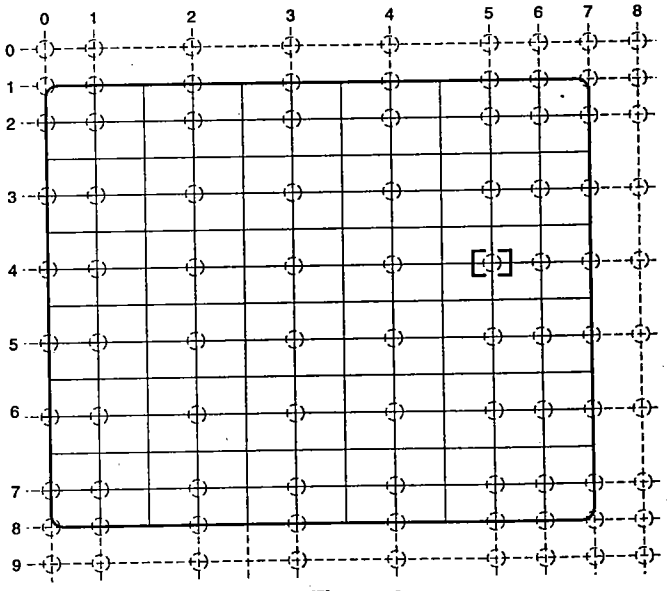


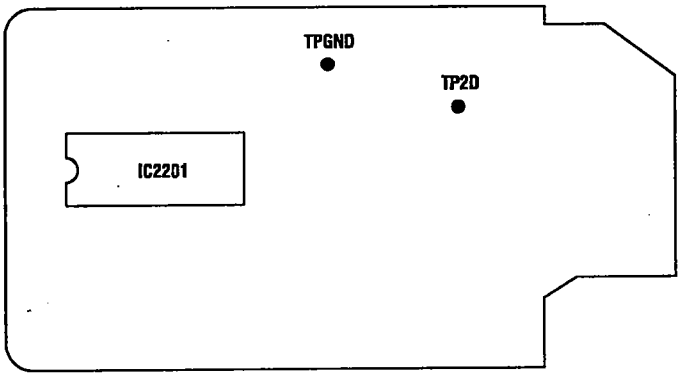
Figure 2

[3D-YC] 20. VC0 Frequency	**Adjustment purpose**	To set the free run frequency of the 28.6 MHz oscillator.
	Symptom when incorrectly adjusted	Horizontal instability on scene changes.

Measuring Instrument	Frequency Counter
Test Point	TP2D
Exit Trigger	
Measurement Range	
Input Signal	None
Input Terminal	External Input

1. Select an External Input with no signal.
2. Connect a Frequency Counter to TP2D.
3. Adjust L2007 to the lower AFC frequency limit of 28.436 MHz.
4. Supply a Color Bar signal.
5. Verify the frequency is locked at 28.63636 MHz.

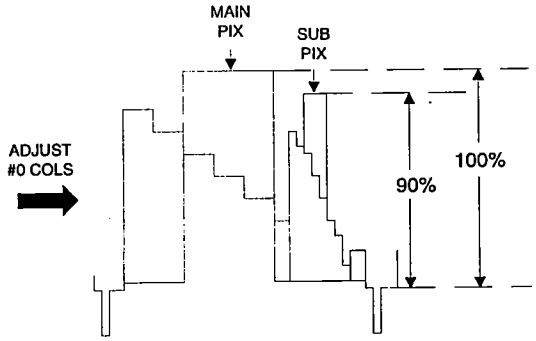
PCB-YCS/MATRIX (COMPONENT SIDE)



[PIP] 21. Color	**Adjustment purpose**	To set the Picture-in-Picture color level.
	Symptom when incorrectly adjusted	PIP color level does not match main picture.

Measuring Instrument	Oscilloscope
Test Point	Connector GH pin 5
Exit Trigger	----
Measurement Range	----
Input Signal	Color Bars
Input Terminal	External Input

1. Supply a Color Bar signal to an External Input.
2. Connect the Oscilloscope to connector "GH" pin 5 on the PCB-Signal.
2. Select the Color Bar signal for both the Main and PIP pictures.
3. Press "MENU 2 3 5 7" in sequence to activate the Adjustment Mode.
4. Select the "SUB MATRIX" function using the "AUDIO" button.
5. Using the "VIDEO" button, select item "2 COLS."
6. Using the "ADJUST" button, set the data so that the PIP amplitude equals 90% of the Main picture. (see figure below)
7. Press "ENTER" to write the data to memory.
8. Press "MENU" to exit the Adjustment Mode.



[PIP]	**Adjustment purpose**	To set the Picture-in-Picture color balance.
22. Tint	**Symptom when incorrectly adjusted**	PIP too red or too green.

Measuring Instrument	----
Test Point	----
Exit Trigger	
Measurement Range	
Input Signal	Color Bars
Input Terminal	External

1. Supply a Color Bar signal to an External Input.
2. Select the Color Bar signal for both the Main and PIP pictures.
3. Press "MENU 2 3 5 7" in sequence to activate the Adjustment Mode.
4. Select the "SUB MATRIX" function using the "AUDIO" button.
5. Select item "1 TNTS" using the "VIDEO" button.
6. Using the "ADJUST" button, set the data so that the tint of the Main and PIP image look the same.
7. Press "ENTER" to write the data to memory.
8. Press "MENU" to exit the Adjustment Mode.

[Guide Plus Circuit]	**Adjustment purpose**	Positioning of Guide Plus Menu display
23. Menu Position Adjust	**Symptom when incorrectly adjusted**	Incorrect Guide Plus Menu position

Measuring Instrument	----
Test Point	----
Exit Trigger	----
Measurement Range	----
Input Signal	RF Signal
Input Terminal	Antenna

Note: *Use a remote control with the Guide Plus feature for this adjustment.*

1. Press the "MENU" button on the remote hand unit.
2. Press the buttons 2-3-5-6 in sequence to switch to the alignment mode.
3. Use the up, down, left, and right adjustment buttons to center the Guide Plus menu on the screen. The PIP window should be attached to the Guide Plus menu without any gaps.
4. Use the PIP channel up/down button to adjust the vertical size of the Guide Plus menu on the screen so that the blue area of the display lines up with, and is the same height as, the PIP window.
5. Press "ENTER" to save changes and exit the adjustment mode.

CHIP PARTS REPLACEMENT

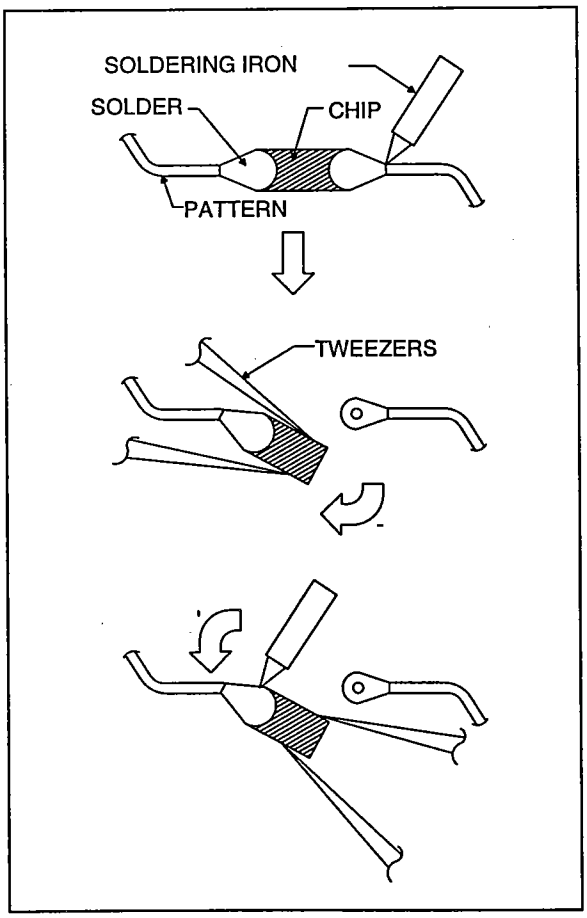
Some resistors, shorting jumpers (0 Ohm resistors), ceramic capacitors, transistors and diodes are chip parts. The following precautions should be taken when replacing these parts.

CAUTIONS:

1. Use a fine tipped, well insulated soldering iron (approximately 30 watts), and tweezers.
2. Melt the solder and remove the chip parts carefully so as not to tear the copper foil from the printed circuit board.
3. Discard removed chips; do not reuse them.
4. Do not apply heat for more than 3 (three) seconds to new chip parts.
5. Avoid using a rubbing stroke when soldering.
6. Take care not to scratch, or damage the chip parts when soldering.
7. Supplementary cementing is not required

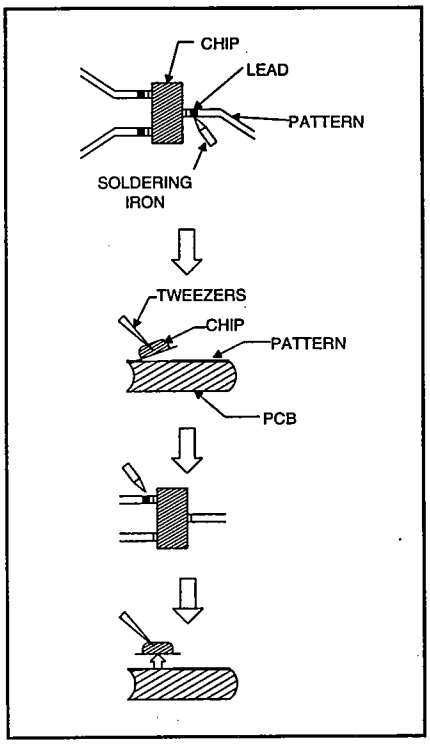
1. Removal of Chip Parts (Resistors, Capacitors, etc.)

A. Grasp the part with tweezers. Melt the solder at both sides alternately and remove one side of the part with a twisting motion.
B. Melt the solder at the other side and remove the part.



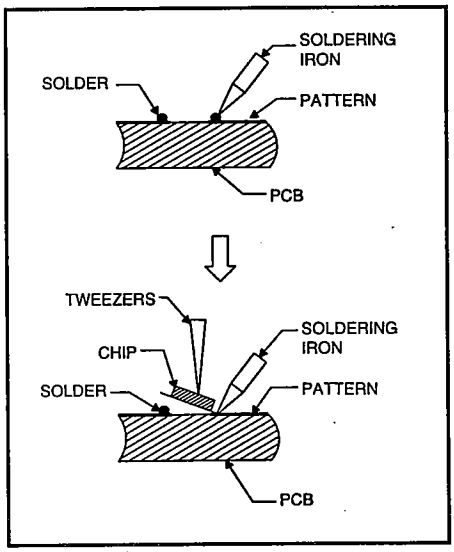
2. Removal of Chip Parts (Transistors)

A. Melt the solder of one lead and lift the side of that lead upward.
B. Simultaneously melt the solder of the other two leads and lift the part from the PCB.



3. Replacement

A. Presolder the contact points on the circuit pattern.
B. Press the part downward with tweezers and apply the soldering iron as shown



2. Electrical Parts and Others

To expedite delivery of replacement parts orders, specify the following:
1. Model Number/Serial Number
2. Part Number and description
3. Quantity

Note: Unless complete information is supplied, delay in processing of orders will result.

A. Symbol

The electrical parts with shading are critical components, and the parts with * are warranty return items.

▨ : Critical Components

* : Warranty Items

B. Component Markings

Refer to the following chart for tolerance characteristics of electrical components.

MARK	B	C	D	F	G	J	K
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10

MARK	M	N	V	X	Z	P	Q
Tolerance %	± 20	± 30	± 10	+ 40 -20	+ 80 -20	+ 100 - 0	+ 30 -10

MARK	M	N	V	X	Z
Tolerance (pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

C. Abbreviation

65903: WS-65903
73903: WS-73903

MODELS WS-65903 WS-73903

SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL

TUBES

	251C202040	ASSY-CRT-RED	WS-65903
	251C202050	ASSY-CRT-GREEN	WS-65903
	251C202060	ASSY-CRT-BLUE	WS-65903
	251C202070	ASSY-CRT-RED	WS-73903
	251C202080	ASSY-CRT-GREEN	WS-73903
	251C202090	ASSY-CRT-BLUE	WS-73903

INTEGRATED CIRCUITS

IC2001	274P886010	IC-C-MOS:TC9086F
IC2002	274P825010	IC-C-MOS:MSM518222-30GS-K
IC2003	274P825010	IC-C-MOS:MSM518222-30GS-K
IC2004	272P583010	IC:NJM2233BM
IC2005	272P940010	IC:TA8667F
IC2006	266P130080	IC:PST993D
IC2007	270P658020	IC:CXA2019AQ
IC2008	274P378010	IC-C-MOS:TC74HC4053AF
IC2009	272P583010	IC:NJM2233BM
IC201	266P932010	IC:NJM7805A/AN7805
IC202	270P210010	IC:NJM7809FA/AN7809F
IC203	267P076050	HIC:SI-3050CA
IC204	267P076020	HIC:SI-3090C
IC205	267P076020	HIC:SI-3090C
IC206	267P131010	HIC:SI-3033C
IC207	272P027010	IC:AN5862K
IC208	263P066020	IC-C-MOS:TC4066BP
IC2201	274P596020	IC:TC90A13N
IC2202	272P658010	IC:MM1031XS
IC2301	270P658020	IC:CXA2019AQ
IC2A0	272P938010	IC:M52055FP
IC2A00	270P204010	IC:PA0057A
IC2A1	272P938010	IC:M52055FP
IC2A2	272P938010	IC:M52055FP
IC2A3	272P938010	IC:M52055FP
IC2A5	272P938010	IC:M52055FP
IC2B00	270P663010	IC:CXA2101Q
IC2D00	270P730010	IC:AN5395FBP
IC300	270P622010	IC:CXA2022S
IC3001	272P440010	IC:LA4282
IC301	272P184010	IC:LA7222
IC401	270P064020	IC:LA7845
IC402	263P303010	IC-C-MOS:TC74HC14AP
IC403	263P525010	IC-C-MOS:MC74HC74AN
IC4A01	270P664010	IC:CXA2102Q
IC500	267P143010	KIC:MSPAC008-2-MK
IC5A00	272P106010	IC:UPC4570C
IC5A01	266P154010	IC:UPC393C
IC5A03	270P704010	IC:LM4040BIZ-10.0
IC700	275P243070	"IC-C-MOS:IC, MN102LP35ZDP"
IC7000	275P218010	IC-C-MOS:TC90A18AF
IC7001	275P217010	IC-C-MOS:TC90A17F
IC7002	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7003	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7004	270P348010	IC:TLC2932IPW
IC7005	263P479010	IC-C-MOS:TC74HC123AF
IC7006	279P086010	IC:TLC2933IPW
IC7007	279P086010	IC:TLC2933IPW
IC7009	275P337010	IC-C-MOS:TC74LVX244F
IC701	275P243060	"IC-C-MOS:IC, MN102LP35ZDP"
IC7010	275P337010	IC-C-MOS:TC74LVX244F
IC7011	274P378010	IC-C-MOS:TC74HC4053AF
IC7012	274P378010	IC-C-MOS:TC74HC4053AF
IC7013	274P036010	IC-C-MOS:TC74HCT04AF
IC7014	275P278020	IC-C-MOS:TC74LVX14F
IC7016	263P436010	IC-C-MOS:MC74HC4066F
IC7017	263P436010	IC-C-MOS:MC74HC4066F
IC703	275P242010	IC-C-MOS:ADM207EAR
IC704	275P241010	IC-C-MOS:24LC32A*P
IC707	275P244010	IC-C-MOS:M66008FP
IC709	270P706010	IC:MAX823
IC710	274P226010	IC-C-MOS:SN74HC00DB
IC720	275P336010	IC-C-MOS:TC74HC11AF
IC721	263P606010	IC-C-MOS:TC74HC32AF
IC7600	270P623010	IC:CXA2069Q
IC7D00	263P436010	IC-C-MOS:MC74HC4066F
IC7D01	270P441010	IC:MB40C568HPFV
IC7D03	270P441010	IC:MB40C568HPFV
IC7D04	275P245010	IC-C-MOS:D77543PGE
IC7D05	270P348010	IC:TLC2932IPW
IC7D06	275P246010	IC-C-MOS:F432270PJ
IC7D07	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7D08	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7D11	270P506010	IC:M51957BFP
IC7D12	270P470010	IC:IC-PST600CMT
IC7G01	275P247010	IC-C-MOS:MB40C958VPFV
IC7G02	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7G03	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7G04	274P377010	IC-C-MOS:TC74HC273AF
IC7G05	274P377010	IC-C-MOS:TC74HC273AF
IC7H00	274P378010	IC-C-MOS:TC74HC4053AF
IC7H01	274P825010	IC-C-MOS:MSM518222-30GS-K
IC7H02	274P825010	IC-C-MOS:MSM518222-30GS-K
IC800	275P223010	IC-C-MOS:CM0007AF
IC802	270P093010	IC:UPC4570G2
IC803	270P093010	IC:UPC4570G2
IC804	270P093010	IC:UPC4570G2
IC805	270P093010	IC:UPC4570G2
IC806	270P093010	IC:UPC4570G2
IC807	270P093010	IC:UPC4570G2
IC808	270P093010	IC:UPC4570G2
IC809	270P348010	IC:TLC2932IPW
IC810	275P222020	IC-C-MOS:M24C32MN6T
IC8A01	275P211010	IC-C-MOS:LC27016B-MF2/GS3
IC8A02	270P712010	IC:MX23C2000QC-12-1171
IC8A03	275P212010	IC-C-MOS:V53C808SHK50/V53
IC8A04	270P502010	IC BU4S584:BU4S584
IC8D01	267P120010	HIC:STK392-040
IC8D02	267P120010	HIC:STK392-040
IC8E01	263P408020	IC-C-MOS:UPD6376GS
IC8E02	263P408020	IC-C-MOS:UPD6376GS
IC8E03	263P408020	IC-C-MOS:UPD6376GS
IC8E04	263P408020	IC-C-MOS:UPD6376GS

MODELS WS-65903 WS-73903

SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL
IC8E05	263P408020	IC-C-MOS:UPD6376GS	
IC8E06	263P408020	IC-C-MOS:UPD6376GS	
IC900	267P140010	HIC:STR-F6626	
IC921	270P651010	IC:LM2576TV-12	
IC922	270P651020	IC:LM2576TV-5	
IC9A00	267P140020	HIC:STR-F6628	
IC9A20	267P126020	HIC:SE095N@LF12FORMING	
IC9A21	267P076030	HIC:SI-3050C	

TRANSISTORS

Q500	260P587020	TR:2SC2333-M
Q501	261P071010	TR:2SC5418 RL
Q502	260P561020	TR:2SA1371-E
Q503	260P788010	TR:2SC4690-O
Q504	260P386010	TR:2SC2230-GR
Q505	260P559030	TR:2SC1740S-S
Q506	260P691010	TR:2SA1358-Y
Q507	260P386010	TR:2SC2230-GR
Q510	260P559030	TR:2SC1740S-S
Q530	261P082010	TR:2SK2771-01R
Q531	260P559050	TR:2SC1740S-E
Q532	260 P559050	TR:2SC1740S-E
Q533	260P559030	TR:2SC1740S-S
Q534	260P559030	TR:2SC1740S-S
Q5A00	260P559050	TR:2SC1740S-E
Q5A01	260P559050	TR:2SC1740S-E
Q5A02	260P560040	TR:2SA933S-S
Q5A03	260P559050	TR:2SC1740S-E
Q5K00	260P664030	TR:2SC4636
Q5K01	260P664030	TR:2SC4636
Q5K02	260P559050	TR:2SC1740S-E
Q5K03	260P560040	TR:2SA933S-S
Q6B00	260P649020	TR:2SC3942
Q6B02	260P696010	TR:2SC3790
Q6B03	260P627020	"TR:2SA1480-D,E"
Q6B04	260P560040	TR:2SA933S-S
Q6G00	260P649020	TR:2SC3942
Q6G02	260P696010	TR:2SC3790
Q6G03	260P627020	"TR:2SA1480-D,E"
Q6R00	260P649020	TR:2SC3942
Q6R02	260P696010	TR:2SC3790
Q6R03	260P627020	"TR:2SA1480-D,E"
Q710	260P560040	TR:2SA933S-S
Q7A10	260P559030	TR:2SC1740S-S
Q7A11	260P560040	TR:2SA933S-S
Q920	261P081010	TR:2SC3425
Q921	260P422010	TR:2SC2482
Q922	260P422010	TR:2SC2482
Q923	260P422010	TR:2SC2482
Q924	260P559030	TR:2SC1740S-S
Q925	260P791020	"TR:2SA1668-Y,G"
Q926	260P559030	TR:2SC1740S-S
Q927	260P627020	"TR:2SA1480-D,E"
Q9A30	260P559050	TR:2SC1740S-E

DIODES

D201	264P045040	DIODE:1S24710M
D202	264P045040	DIODE:1S24710M
D205	264D056020	DIODE:S5500D/EM1Z/ERB12-2
D207	264P481090	DIODE:RD3.3FB2
D208	264P481090	DIODE:RD3.3FB2
D2A12	264P483080	DIODE:RD5.1FB2
D300	264P045040	DIODE:1S24710M
D3002	264P045040	DIODE:1S24710M
D3003	264P045040	DIODE:1S24710M
D3005	264P045040	DIODE:1S24710M
D3006	264P045040	DIODE:1S24710M
D3007	264P045040	DIODE:1S24710M
D301	264P045040	DIODE:1S24710M
D401	264D056020	DIODE:S5500D/EM1Z/ERB12-2
D402	264D056020	DIODE:S5500D/EM1Z/ERB12-2
D403	264D056020	DIODE:S5500D/EM1Z/ERB12-2
D4C01	264P045040	DIODE:1S24710M
D500	264P661010	DIODE:FMP-G5HS
D501	264D056020	DIODE:S5500D/EM1Z/ERB12-2
D503	264P045040	DIODE:1S24710M
D504	264P486080	DIODE:RD10FB1
D530	264P793010	DIODE:FMP-G3FS
D531	264P724010	DIODE:STF14
D532	264P724010	DIODE:STF14
D533	264P793010	DIODE:FMP-G3FS
D535	264P045040	DIODE:1S24710M
D536	264P045040	DIODE:1S24710M
D537	264P045040	DIODE:1S24710M
D541	264P045040	DIODE:1S24710M
D543	264D056020	DIODE:S5500D/EM1Z/ERB12-2
D544	264P045040	DIODE:1S24710M
D560	264P045040	DIODE:1S24710M
D561	264P487090	DIODE:RD12FB3
D562	264P489010	DIODE:RD16FB1
D563	264P045040	DIODE:1S24710M
D564	264P045040	DIODE:1S24710M
D5A00	264P045040	DIODE:1S24710M
D5A01	264P045040	DIODE:1S24710M
D5A04	264P045040	DIODE:1S24710M
D5A05	264P045040	DIODE:1S24710M
D5A06	264P045040	DIODE:1S24710M
D5A08	264P483070	DIODE:RD5.1FB1
D5A09	264P489030	DIODE:RD16FB3
D5A26	264P045040	DIODE:1S24710M
D5K01	264P528030	DIODE:RP1H
D5K02	264P543010	DIODE:EG01
D5K03	264P543010	DIODE:EG01
D5K10	264P528030	DIODE:RP1H
D5K11	264P528030	DIODE:RP1H
D6B02	264P045040	DIODE:1S24710M
D6B03	264P457080	DIODE:RD3.3EB1
D6B06	264P045040	DIODE:1S24710M
D6G02	264P045040	DIODE:1S24710M
D6G06	264P045040	DIODE:1S24710M
D6R02	264P045040	DIODE:1S24710M

SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL
D6R06	264P045040	DIODE:1S24710M	
D706	264P486020	DIODE:RD8.2FB3	
D7600	264P485060	DIODE:RD7.5FB2	
D7601	264P485060	DIODE:RD7.5FB2	
D7602	264P485060	DIODE:RD7.5FB2	
D7603	264P485060	DIODE:RD7.5FB2	
D7604	264P485060	DIODE:RD7.5FB2	
D7605	264P045040	DIODE:1S24710M	
D7606	264P045040	DIODE:1S24710M	
D7607	264P045040	DIODE:1S24710M	
D7608	264P045040	DIODE:1S24710M	
D7609	264P045040	DIODE:1S24710M	
D8A01	264D056020	DIODE:S5500D/EM1Z/ERB12-2	
D8A02	264P551010	DIODE:RK13	
D8A03	264D056020	DIODE:S5500D/EM1Z/ERB12-2	
D8A04	264P045040	DIODE:1S24710M	
D8D81	264P045040	DIODE:1S24710M	
D8D82	264P684010	DIODE:SBA100-09	
D8D83	264P045040	DIODE:1S24710M	
D8D84	264P684010	DIODE:SBA100-09	
D8D90	264P486050	DIODE:RD9.1FB2	
D8D91	264P486050	DIODE:RD9.1FB2	
D8D92	264P482080	DIODE:RD4.3FB1	
D8D93	264P045040	DIODE:1S24710M	
D8D94	264P501090	DIODE:HZ4CLL	
D8D95	264P718010	DIODE:FR155	
D8D96	264P718010	DIODE:FR155	
D911	264P724010	DIODE:STF14	
D912	264P724010	DIODE:STF14	
D913	264P724010	DIODE:STF14	
D914	264P724010	DIODE:STF14	
D915	264P573020	DIODE:EG1A	
D920	264P578010	DIODE:RG2A	
D922	264P102040	DIODE:RU3M	
D923	264P566010	DIODE:FMP-G12S	
D925	264P566010	DIODE:FMP-G12S	
D928	264P484040	DIODE:RD5.6FB3	
D930	264P788010	DIODE:SR305	
D931	264P788010	DIODE:SR305	
D932	264P045040	DIODE:1S24710M	
D940	264P045040	DIODE:1S24710M	
D950	264P724010	DIODE:STF14	
D9A00	264P512020	DIODE:RBV-40C	
D9A02	264P535010	DIODE:RBV-608	
D9A05	264P724010	DIODE:STF14	
D9A06	264P724010	DIODE:STF14	
D9A07	264P724010	DIODE:STF14	
D9A08	264P724010	DIODE:STF14	
D9A09	264P573020	DIODE:EG1A	
D9A20	264P588010	DIODE:FML-G16S	
D9A21	264P102040	DIODE:RU3M	
D9A22	264P566010	DIODE:FMP-G12S	
D9A23	264P566010	DIODE:FMP-G12S	
D9A24	264P102040	DIODE:RU3M	
D9A25	264P487090	DIODE:RD12FB3	
D9A26	264P102040	DIODE:RU3M	
D9A30	264D056020	DIODE:S5500D/EM1Z/ERB12-2	
D9A31	264P487080	DIODE:RD12FB2	

COILS

SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL
L101	325C121030	COIL-PEAKING:10MH-K	
L102	325C121030	COIL-PEAKING:10MH-K	
L103	325C121030	COIL-PEAKING:10MH-K	
L104	325C121030	COIL-PEAKING:10MH-K	
L105	325C121030	COIL-PEAKING:10MH-K	
L106	325C121030	COIL-PEAKING:10MH-K	
L107	321C114010	COIL-RF:2200MH-J	
L111	325C121030	COIL-PEAKING:10MH-K	
L112	325C121030	COIL-PEAKING:10MH-K	
L113	325C121030	COIL-PEAKING:10MH-K	
L114	325C121030	COIL-PEAKING:10MH-K	
L115	325C121030	COIL-PEAKING:10MH-K	
L116	325C121030	COIL-PEAKING:10MH-K	
L117	321C114010	COIL-RF:2200MH-J	
L2007	349P205010	COIL-OSC:M5-N JN-5162	
L201	325C121030	COIL-PEAKING:10MH-K	
L250	325C112070	COIL-PEAKING:150MH-K	
L251	325C112070	COIL-PEAKING:150MH-K	
L252	325C112070	COIL-PEAKING:150MH-K	
L2A0	325C121030	COIL-PEAKING:10MH-K	
L2A00	325C460090	COIL-PEAKING:4.7MH-K	
L2A1	325C121030	COIL-PEAKING:10MH-K	
L2A11	325C460090	COIL-PEAKING:4.7MH-K	
L2A12	325C460090	COIL-PEAKING:4.7MH-K	
L2A13	325C460090	COIL-PEAKING:4.7MH-K	
L2A2	325C121030	COIL-PEAKING:10MH-K	
L2A3	325C121030	COIL-PEAKING:10MH-K	
L2A5	325C121030	COIL-PEAKING:10MH-K	
L2A6	325C121030	COIL-PEAKING:10MH-K	
L2B00	325C460090	COIL-PEAKING:4.7MH-K	
L2B01	325C460090	COIL-PEAKING:4.7MH-K	
L2B02	325C460090	COIL-PEAKING:4.7MH-K	
L2B03	325C460090	COIL-PEAKING:4.7MH-K	
L2B04	325C460090	COIL-PEAKING:4.7MH-K	
L2D00	325C460090	COIL-PEAKING:4.7MH-K	
L2K0	325C121090	COIL-PEAKING:33MH-K	
L300	325C121030	COIL-PEAKING:10MH-K	
L301	325C121030	COIL-PEAKING:10MH-K	
L401	321C130010	COIL-RF:2MH +-15%	
L411	325C401030	COIL-PEAKING:10MH-J	
L415	321C031090	COIL-RF:33MH-K	
L4A01	325C461030	COIL-PEAKING:10MH-K	
L4A02	325C461030	COIL-PEAKING:10MH-K	
L501	351P156020	CHOKE:YT-4361-1 2.4MH	
L502	333P052010	COIL-HORIZ-LIN:	
L503	411P001010	LEAD-FERRITE:HF40BHZ	
L530	321C141030	COIL-RF:10MH-K	
L531	321C141030	COIL-RF:10MH-K	
L5K00	411P001040	LEAD-FERRITE:	
L6B00	325C461010	COIL-PEAKING:6.8MH-K	
L6B01	325C460070	COIL-PEAKING:3.3MH-K	
L6B02	325C460060	COIL-PEAKING:2.7MH-K	
L6G00	325C461010	COIL-PEAKING:6.8MH-K	

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SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL
L6G01	325C460070	COIL-PEAKING:3.3MH-K	
L6G02	325C460060	COIL-PEAKING:2.7MH-K	
L6R00	325C461010	COIL-PEAKING:6.8MH-K	
L6R01	325C460070	COIL-PEAKING:3.3MH-K	
L6R02	325C460060	COIL-PEAKING:2.7MH-K	
L701	325C121030	COIL-PEAKING:10MH-K	
L702	325C121030	COIL-PEAKING:10MH-K	
L703	325C121030	COIL-PEAKING:10MH-K	
L704	325C121030	COIL-PEAKING:10MH-K	
L705	325C121030	COIL-PEAKING:10MH-K	
L706	325C121030	COIL-PEAKING:10MH-K	
L707	325C121030	COIL-PEAKING:10MH-K	
L714	325C121030	COIL-PEAKING:10MH-K	
L716	325C121030	COIL-PEAKING:10MH-K	
L718	325C121030	COIL-PEAKING:10MH-K	
L720	325C120050	COIL-PEAKING:2.2MH-M-OR-K	
L7600	325C121030	COIL-PEAKING:10MH-K	
L7601	325C462080	COIL-PEAKING:180MH-J	
L7602	325C462080	COIL-PEAKING:180MH-J	
L7603	325C121030	COIL-PEAKING:10MH-K	
L7604	325C121030	COIL-PEAKING:10MH-K	
L7605	325C121030	COIL-PEAKING:10MH-K	
L7606	325C121030	COIL-PEAKING:10MH-K	
L7607	325C121030	COIL-PEAKING:10MH-K	
L7608	325C121030	COIL-PEAKING:10MH-K	
L7609	325C121030	COIL-PEAKING:10MH-K	
L7610	325C121030	COIL-PEAKING:10MH-K	
L7611	321C114070	COIL-RF:6800MH-J	
L7612	321C114070	COIL-RF:6800MH-J	
L7613	325C121030	COIL-PEAKING:10MH-K	
L7614	325C121030	COIL-PEAKING:10MH-K	
L7615	325C121030	COIL-PEAKING:10MH-K	
L79A0	325C121030	COIL-PEAKING:10MH-K	
L800	325C461030	COIL-PEAKING:10MH-K	
L801	325C461030	COIL-PEAKING:10MH-K	
L802	325C461030	COIL-PEAKING:10MH-K	
L803	325C461030	COIL-PEAKING:10MH-K	
L804	325C461030	COIL-PEAKING:10MH-K	
L806	325C463040	COIL-PEAKING:560MH-J	
L808	325C463040	COIL-PEAKING:560MH-J	
L810	325C463040	COIL-PEAKING:560MH-J	
L812	325C463040	COIL-PEAKING:560MH-J	
L814	325C463040	COIL-PEAKING:560MH-J	
L816	325C463040	COIL-PEAKING:560MH-J	
L818	325C463040	COIL-PEAKING:560MH-J	
L820	325C461030	COIL-PEAKING:10MH-K	
L8A02	325C121030	COIL-PEAKING:10MH-K	
L8D01	325C121030	COIL-PEAKING:10MH-K	
L8D02	325C121030	COIL-PEAKING:10MH-K	
L8D41	325C121030	COIL-PEAKING:10MH-K	
L8D42	325C121030	COIL-PEAKING:10MH-K	
L8D43	321C031090	COIL-RF:33MH-K	
L8E01	325C461030	COIL-PEAKING:10MH-K	
L8E02	325C461030	COIL-PEAKING:10MH-K	
L900	351P064030	LINE-FILTER:SE26TL-40030A	
L901	351P083020	LINE-FILTER:SC-05-50J-D	
L910	411D009020	CORE-FERRITE:	
L911	411P001080	LEAD-FERRITE:B-20L-48B	
L921	351P155010	COIL-FILTER:YT-4388-1	
L923	351P155010	COIL-FILTER:YT-4388-1	
L925	411P001010	LEAD-FERRITE:HF40BHZ	
L926	411P001010	LEAD-FERRITE:HF40BHZ	
L928	411P001010	LEAD-FERRITE:HF40BHZ	
L930	335P020020	COIL-CHOKE:300UH	
L931	335P020020	COIL-CHOKE:300UH	
L932	325C113000	COIL-PEAKING:270MH-K	
L980	411P001080	LEAD-FERRITE:B-20L-48B	
L9A00	351P011020	LINE-FILTER:	
L9A05	411D009020	CORE-FERRITE:	
L9A06	411P001080	LEAD-FERRITE:B-20L-48B	
L9A20	411P001010	LEAD-FERRITE:HF40BHZ	
L9A21	411P012010	FERRITE-BEAD:B-6-31A1-A	
L9A22	411P001010	LEAD-FERRITE:HF40BHZ	
L9A23	411P001010	LEAD-FERRITE:HF40BHZ	
L9A24	411P001010	LEAD-FERRITE:HF40BHZ	
L9A25	411P001010	LEAD-FERRITE:HF40BHZ	
LC2001	409P402030	EMI-FILTER:FZ103N100	
LC2002	409P402030	EMI-FILTER:FZ103N100	
LC2291	409P402030	EMI-FILTER:FZ103N100	
LC2292	409P402030	EMI-FILTER:FZ103N100	
LC701	409P402010	EMI-FILTER:B101M100	
LC702	409P402010	EMI-FILTER:B101M100	
LC703	409P402010	EMI-FILTER:B101M100	
LF2001	409P869050	LOW-PASS-FILTER:H355LSK-8	
LF2021	409P869050	LOW-PASS-FILTER:H355LSK-8	
LF2041	409P869050	LOW-PASS-FILTER:H355LSK-8	
LF7D00	409P900010	LOW-PASS-FILTER:7MHZ SMD	
LF7D01	409P900010	LOW-PASS-FILTER:7MHZ SMD	
LF7D02	409P900010	LOW-PASS-FILTER:7MHZ SMD	
LF7G00	409P901010	LOW-PASS-FILTER:14MHZ SMD	
LF7G01	409P901010	LOW-PASS-FILTER:14MHZ SMD	
LF7G02	409P901010	LOW-PASS-FILTER:14MHZ SMD	

CAPACITORS AND TRIMMERS

C104	141P133080	C-CER-CHIP:F50V 0.01M-Z	
C106	141P133080	C-CER-CHIP:F50V 0.01M-Z	
C108	141P133080	C-CER-CHIP:F50V 0.01M-Z	
C110	141P133080	C-CER-CHIP:F50V 0.01M-Z	
C2217	172P391030	C-FILM-CHIP:16V 0.01M-J	
C408	172P416010	C-M-PLA-PP:200V 0.33M-J	
C411	181P358010	C-ELEC:35V/2200M-M	WS-65903
C505	172P461030	C-M-PLA-PP:2000V 3300P-J	
C506	172P461030	C-M-PLA-PP:2000V 3300P-J	
C507	172P460050	C-M-PLA-PP:2000V 1500P-J	
C508	172P416040	C-M-PLA-PP:200V 0.43M-J	
C509	172P416030	C-M-PLA-PP:200V 0.39M-J	WS-65903
C509	172P416040	C-M-PLA-PP:200V 0.43M-J	WS-73903
C530	172P088060	C-PLASTIC-PP:630V 6800P-J	
C531	172P460010	C-M-PLA-PP:2000V 1000P-J	
C532	172P460030	C-M-PLA-PP:2000V 1200P-J	
C540	172P151020	C-PLAST-PP:200V 0.1M-J	
C5K01	172P461090	C-M-PLA-PP:2000V 5600P-J	
C8A06	189P097040	C-ELE-2-LAYERS:FYD0H224Z	

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SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL
C900	189P153040	C-M-POLYES:AC250V/0.1M-M	
C901	189P185090	C-CERAMIC-AC:AC250V E2200	
C902	189P185090	C-CERAMIC-AC:AC250V E2200	
C903	189P153020	C-M-POLYESTER-AC:AC125V/2	
C905	189P185070	C-CERAMIC-AC:AC250V E1000	
C906	189P185070	C-CERAMIC-AC:AC250V E1000	
C907	189P185090	C-CERAMIC-AC:AC250V E2200	
C908	189P185090	C-CERAMIC-AC:AC250V E2200	
C910	185D102040	C-ELECTROLYTIC:H200V 820M	
C914	172P087070	C-PLAST-PP:630V 0.047M-J	
C916	172P088030	C-PLAST-PP:630V 2200P-J	
C930	181P357080	C-ELEC:50V/2200M-M	WS-65903
C931	181P357040	C-ELEC:100V/220M-M	WS-65903
C9A00	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A01	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A02	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A03	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A04	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A05	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A06	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A07	189P185090	C-CERAMIC-AC:AC250V E2200	
C9A08	185D132040	C-ELECTROLYTIC:H200V 820M	
C9A12	172P087070	C-PLAST-PP:630V 0.047M-J	
C9A14	172P088030	C-PLAST-PP:630V 2200P-J	
C9A17	189P153020	C-M-POLYESTER-AC:AC125V/2	
C9A18	189P152050	C-M-POLYES:AC250V/4700P-M	
C9A19	189P152050	C-M-POLYES:AC250V/4700P-M	
C9A21	185D100030	C-ELECTROLYTIC:H160V 820M	
C9A23	185D143020	C-ELECTROLYTIC:H50V 4700M	
C9A26	185D142020	C-ELECTROLYTIC:H35V 6800M	
C9A29	185D142020	C-ELECTROLYTIC:H35V 6800M	
C9A32	185D163020	C-ELECTRO:H50V/4700M/105C	

RESISTORS

R201	103C390040	R-METAL-P:3W 18-J	
R202	103C398090	R-METAL-P:3W 5.6-K	
R203	103C398090	R-METAL-P:3W 5.6-K	
R205	103C398070	R-METAL-P:3W 3.9-K	
R215	103C398070	R-METAL-P:3W 3.9-K	
R216	103C398050	R-METAL-P:3W 2.7-K	
R217	103C398040	R-METAL-P:3W 2.2-K	
R3018	103P758040	R-FUSE:1/4W 2.2-J	
R3019	103P758040	R-FUSE:1/4W 2.2-J	
R401	103C188050	R-METAL:2W 2.7-J	
R402	103C188050	R-METAL:2W 2.7-J	
R413	103C171080	R-METAL:1W 270-J	
R505	103C192080	R-METAL:3W 1.8K-J	
R506	103C192070	R-METAL:3W 1.5K-J	
R507	103C193040	R-METAL:3W 5.6K-J	
R512	103C392040	R-METAL-P:3W 820-J	
R514	103C190050	R-METAL:3W 22-J	
R516	103C197070	R-METAL:3W 0.56-J	
R525	103C194010	R-METAL:3W 22K-J	
R530	103C390090	R-METAL-P:3W 47-J	
R531	102P107000	R-WIRE:2W 0.15-K	
R560	103C392030	R-METAL-P:3W 680-J	
R5K09	103P762020	R-FUSE:1/2W 560-J	
R5K12	103P761080	R-FUSE:1/2W 270-J	
R5K34	103P761080	R-FUSE:1/2W 270-J	
R5K50	103P762050	R-FUSE:1/2W 1K-J	
R6B00	103C393010	R-METAL-P:3W 3.3K-J	
R6B01	103C393010	R-METAL-P:3W 3.3K-J	
R6B02	103C393010	R-METAL-P:3W 3.3K-J	
R6B03	103C393010	R-METAL-P:3W 3.3K-J	
R6B13	103P761070	R-FUSE:1/2W 220-J	
R6G00	103C393010	R-METAL-P:3W 3.3K-J	
R6G01	103C393010	R-METAL-P:3W 3.3K-J	
R6G02	103C393010	R-METAL-P:3W 3.3K-J	
R6G03	103C393010	R-METAL-P:3W 3.3K-J	
R6G13	103P761070	R-FUSE:1/2W 220-J	
R6R00	103C393010	R-METAL-P:3W 3.3K-J	
R6R01	103C393010	R-METAL-P:3W 3.3K-J	
R6R02	103C393010	R-METAL-P:3W 3.3K-J	
R6R03	103C393010	R-METAL-P:3W 3.3K-J	
R6R13	103P761070	R-FUSE:1/2W 220-J	
R8D12	103C391050	R-METAL-P:3W 150-J	
R8D13	103C391050	R-METAL-P:3W 150-J	
R8D14	103C391050	R-METAL-P:3W 150-J	
R8D21	103C188090	R-METAL:2W 5.6-J	
R8D22	103C188090	R-METAL:2W 5.6-J	
R8D23	103C188090	R-METAL:2W 5.6-J	
R8D24	103C188090	R-METAL:2W 5.6-J	
R8D25	103C188090	R-METAL:2W 5.6-J	
R8D26	103C188090	R-METAL:2W 5.6-J	
R8D27	103C188090	R-METAL:2W 5.6-J	
R8D28	103C188090	R-METAL:2W 5.6-J	
R8D29	103C188090	R-METAL:2W 5.6-J	
R8D34	102P107060	R-WIRE:2W 0.47-K	
R8D35	102P107060	R-WIRE:2W 0.47-K	
R8D52	103C391050	R-METAL-P:3W 150-J	
R8D53	103C391050	R-METAL-P:3W 150-J	
R8D54	103C391050	R-METAL-P:3W 150-J	
R8D61	103C188090	R-METAL:2W 5.6-J	
R8D62	103C188090	R-METAL:2W 5.6-J	
R8D63	103C188090	R-METAL:2W 5.6-J	
R8D64	103C188090	R-METAL:2W 5.6-J	
R8D65	103C188090	R-METAL:2W 5.6-J	
R8D66	103C188090	R-METAL:2W 5.6-J	
R8D67	103C188090	R-METAL:2W 5.6-J	
R8D68	103C188090	R-METAL:2W 5.6-J	
R8D69	103C188090	R-METAL:2W 5.6-J	
R8D90	103C391090	R-METAL-P:3W 330-J	
R8D91	103C391090	R-METAL-P:3W 330-J	
R905	103C394010	R-METAL-P:3W 22K-J	
R912	102P107040	R-WIRE:2W 0.33-K	
R918	103C198030	R-METAL:3W 1.8-J	
R919	102P107030	R-WIRE:2W 0.27-K	
R927	103C394030	R-METAL-P:3W 33K-J	
R928	103C394040	R-METAL-P:3W 39K-J	
R932	103C194080	R-METAL:3W 82K-J	
R963	103C190050	R-METAL:3W 22-J	
R9A00	102P338000	R-CEMENT-WIRE:15W 1-K	
R9A01	102P338030	R-CEMENT-WIRE:15W 1.8-K	

MODELS WS-65903 WS-73903

SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL

R9A04	102P107020	R-WIRE:2W 0.22-K
R9A11	103C393090	R-METAL-P:3W 15K-J
R9A13	103C198030	R-METAL:3W 1.8-J
R9A14	103C184090	R-METAL:2W100K-J
R9A15	102P107020	R-WIRE:2W 0.22-K
R9A16	102P107010	R-WIRE:2W 0.18-K
R9A24	103C191090	R-METAL:3W 330-J
R9A27	103C398050	R-METAL-P:3W 2.7-K
R9A28	103C398020	R-METAL-P:3W 1.5-K
R9A33	103C192010	R-METAL:3W 470-J

SWITCHES

S7800	432P089010	SW-KEY-BOARD:
S7B00	432P089010	SW-KEY-BOARD:
S7B01	432P089010	SW-KEY-BOARD:
S7B02	432P089010	SW-KEY-BOARD:
S7B03	432P089010	SW-KEY-BOARD:
S7B04	432P089010	SW-KEY-BOARD:
S7B05	432P089010	SW-KEY-BOARD:
S7B06	432P089010	SW-KEY-BOARD:
S7B07	432P089010	SW-KEY-BOARD:
S7B08	432P089010	SW-KEY-BOARD:
S7B09	432P089010	SW-KEY-BOARD:
S7B10	432P089010	SW-KEY-BOARD:
S7B11	432P089010	SW-KEY-BOARD:
S7B12	432P089010	SW-KEY-BOARD:

SCREEN ASSEMBLY

491P083010	SCREEN-LENTICULAR:	WS-65903
491P084010	LENS-FRESNEL:	WS-65903
491P085010	SCREEN-LENTICULAR:	WS-73903
491P086010	LENS-FRESNEL:	WS-73903
622D746010	CLIP-SIDE:WS	WS-73903
622D746020	CLIP-SIDE:	WS-65903
622D748020	CUSHION:CONER FRAME	
701C078010	DIAMOND-SHIELD:	WS-73903
701C078020	DIAMOND-SHIELD:	WS-65903
711C026010	Frame/Screen Top	WS-73903
711C026020	Frame/Screen Sides	WS-73903
711C026030	Frame/Screen Bottom	WS-73903
711C026040	Frame/Screen Top	WS-65903
711C026050	Frame/Screen Sides	WS-65903
711C026060	Frame/Screen Bottom	WS-65903
768C065010	CORNER CAP:	

MISCELLANEOUS

SP391	480P041010	SPEAKER:LARGE	WS-65903
SP3912	480P038020	SPEAKER:LARGE	WS-73903
SP392	480P041010	SPEAKER:LARGE	WS-65903
SP393	480P036020	SPEAKER:SMALL	WS-65903
SP3934	480P036020	SPEAKER:SMALL	WS-73903
SP394	480P036020	SPEAKER:SMALL	WS-65903
	453B033040	CAP-ANODE:RED	WS-73903
	453B033050	CAP-ANODE:GREEN	WS-73903
	453B033060	CAP-ANODE:BLUE	WS-73903
	453B033070	CAP-ANODE:RED	WS-65903
	453B033080	CAP-ANODE:GREEN	WS-65903
	453B033090	CAP-ANODE:BLUE	WS-65903
	490P195010	LENS:ALL COLORS	WS-73903
	767C031010	MIRROR:	WS-73903
	767D048090	MIRROR:	WS-65903
	129P059050	VR-FOCUS:MHF116-50W	
	330P260010	DEFL-YOKE	
	449C141030	SOCKET-CRT:	
	920P015010	HV-BLOCK:MSC101-01B	
	189P078010	C-M-Plastic-PP:200V 10M-K	WS-73903
	189P078020	C-M-PLASTIC-PP:200V 0.82M	WS-65903

PT7A10	264P723010	D-LED:SFH310-3
T500	334P264010	TRANS-FLYBACK
T501	336P024010	TRANS-HORIZ-DRIVE:ETH-24Y
T900	350P731010	TRANS-POWER:P731-1
T9A00	350P736010	TRANS-POWER:P736-1
AG5K00	224D019040	AIR-GAP:2.0+-0.5KV SHORT
AG900	224D019040	AIR-GAP:2.0+-0.5KV SHORT
RV900	265P100010	VARISTOR:ERZV10D271/ERZVE
CF2001	299P128010	CERAMIC-OSC:CSB500F2
CF2301	299P128010	CERAMIC-OSC:CSB500F2
D7800	264P212020	D-LED:LN31GPH
DL2001	337P188010	DELAY-LINE:
K9A30	287P049070	Relay-Power DJ12D1-0(M)/DG12D1-0(M)
K9A31	287P049070	Relay-Power DJ12D1-0(M)/DG12D1-0(M)
PC900	268P058020	Photo-Coupler:ON3131/ON3161-R
PC9A00	268P058020	Photo-Coupler:ON3131/ON3161-R
TU101	295P482010	TUNER-RF:ENG26801D
TU102	295P482010	TUNER-RF:ENG26801D
TU103	295P421020	ANTENNA-SW:ENPE624
Z79A0	939P296060	UNIT-PREAMP:HC-437ME

SYMBOL NO.	PART NO.	NAME/DESCRIPTION	MODEL
F900	283D060020	FUSE-UL:S5A	
F920	283P043020	FUSE:LF251 1A	
F921	283P043090	FUSE:LF251 5A	
F923	283P043090	FUSE:LF251 5A	
F924	283P043020	FUSE:LF251 1A	
F930	283P043060	FUSE:LF251 3A	
F931	283P043060	FUSE:LF251 3A	
F9A20	283P043090	FUSE:LF251 5A	
F9A21	283P043090	FUSE:LF251 5A	
F9A22	283P043090	FUSE:LF251 5A	
F9A23	283P043090	FUSE:LF251 5A	
F9A24	283P043090	FUSE:LF251 5A	
F9A25	283P043090	FUSE:LF251 5A	
X2001	285P066010	Quartz-Crystal: 3.579545MH	
X2301	285P066010	Quartz-Crystal: 3.579545MH	
X700	285P029030	Quartz-Crystal: 4.000000MH	
X701	285P029030	Quartz-Crystal: 4.000000MH	
X7K00	285P359010	Quartz-Crystal: 36.00000MH	
X8A01	285P346010	Quartz-Crystal:4.027920MH	
PJ7600	440C315020	PIN-JACK-BOARD-6P-S:	
PJ7601	440C315030	PIN-JACK-BOARD-6P-S:	
PJ7602	440C323010	PIN-JACK-BOARD-3P:	
PJ7603	451C117010	JACK-HEADPHONE:BLK	
PJ7604	451C117010	JACK-HEADPHONE:BLK	
PJ7606	440C208010	TERMINAL-BNC-5P:	
PJ7607	440C261050	PIN-JACK-BOARD-2P:	
PJ7608	440C261050	PIN-JACK-BOARD-2P:	
PJ7609	451C117010	JACK-HEADPHONE:BLK	
PJ79C0	440C231010	JACK-3PIN:FRONT A/V INPUT	

COSMETIC

246C351030	AC-POWER-CORD	
589C062010	CASTER	
622C061010	CLIP-Cabinet RT Cover	
622C061020	CLIP-Cabinet LFT Cover	
641C474030	DAMPER-Control Panel	
642C318010	BOARD-REAR	WS-73903
642C330010	BOARD-REAR	WS-73903
642C337010	BOARD-REAR	WS-65903
702A383010	COVER-CONTROL:PS	
702A384010	DOOR-CONTROL:PS	WS-73903
702A384020	DOOR-CONTROL:PS	WS-65903
702A387010	R. Terminal Plastic Cover	
704B147010	KNOB-POWER:	WS-73903
704B147020	KNOB-POWER:	WS-65903
752C244010	UNIT-FLIP-PANEL-CONT:	
760A004010	OVERLAY,REAR TERMINAL	
760B259010	OVERLAY,CONTROL PANEL	
761C437010	DOOR-CATCH:	
762B331010	COVER-FRONT	WS-73903
762B332010	GRILLE-SP-R:	WS-73903
762B332020	GRILLE-SP-L:	WS-73903
762B333010	BACK-COVER:	
762B335010	COVER-FRONT	WS-65903
762B336010	GRILLE-SP-R:	WS-65903
762B336020	GRILLE-SP-L:	WS-65903

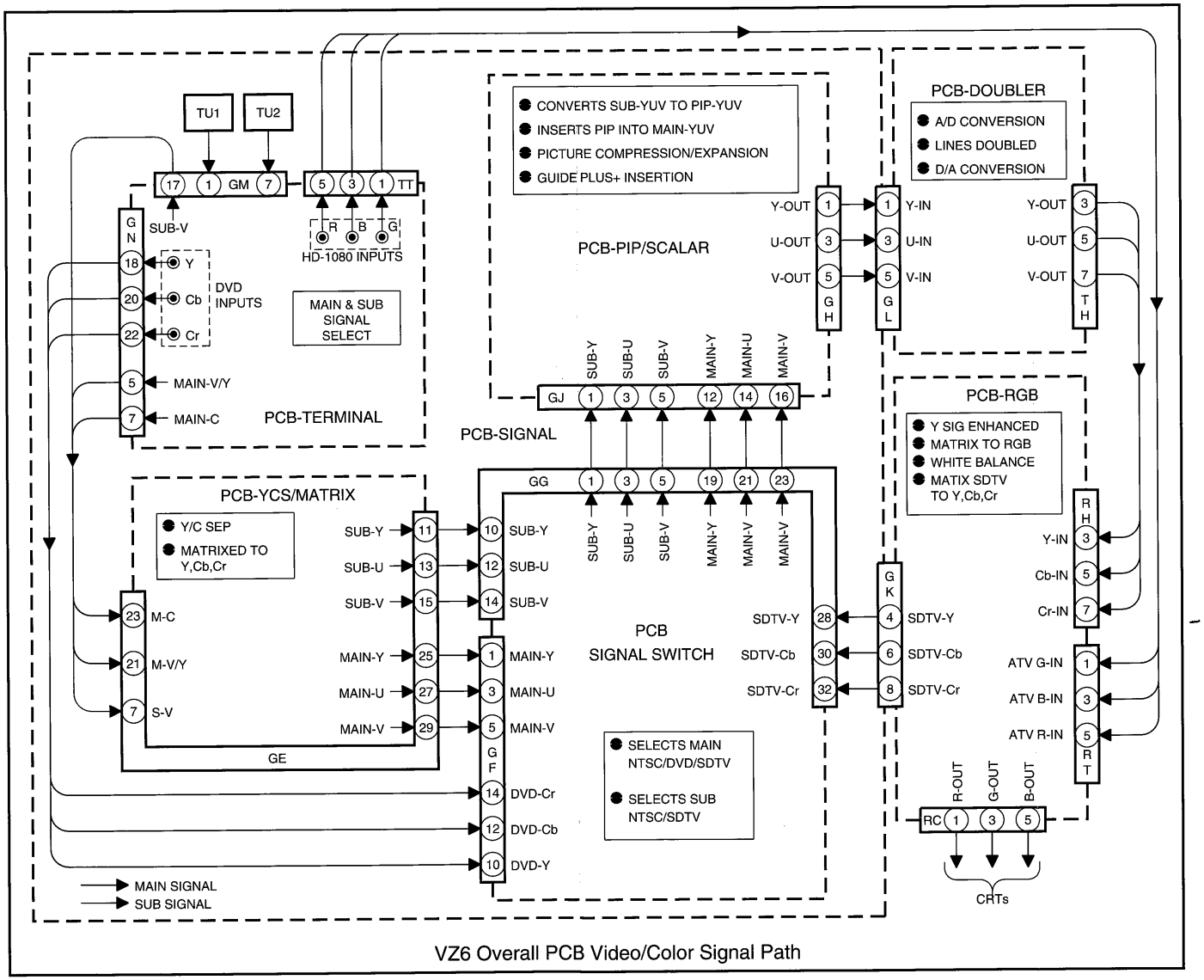
ACCESORIES

242D483010	IR-EMITTER:
290P094020	REMOTE HAND UNIT

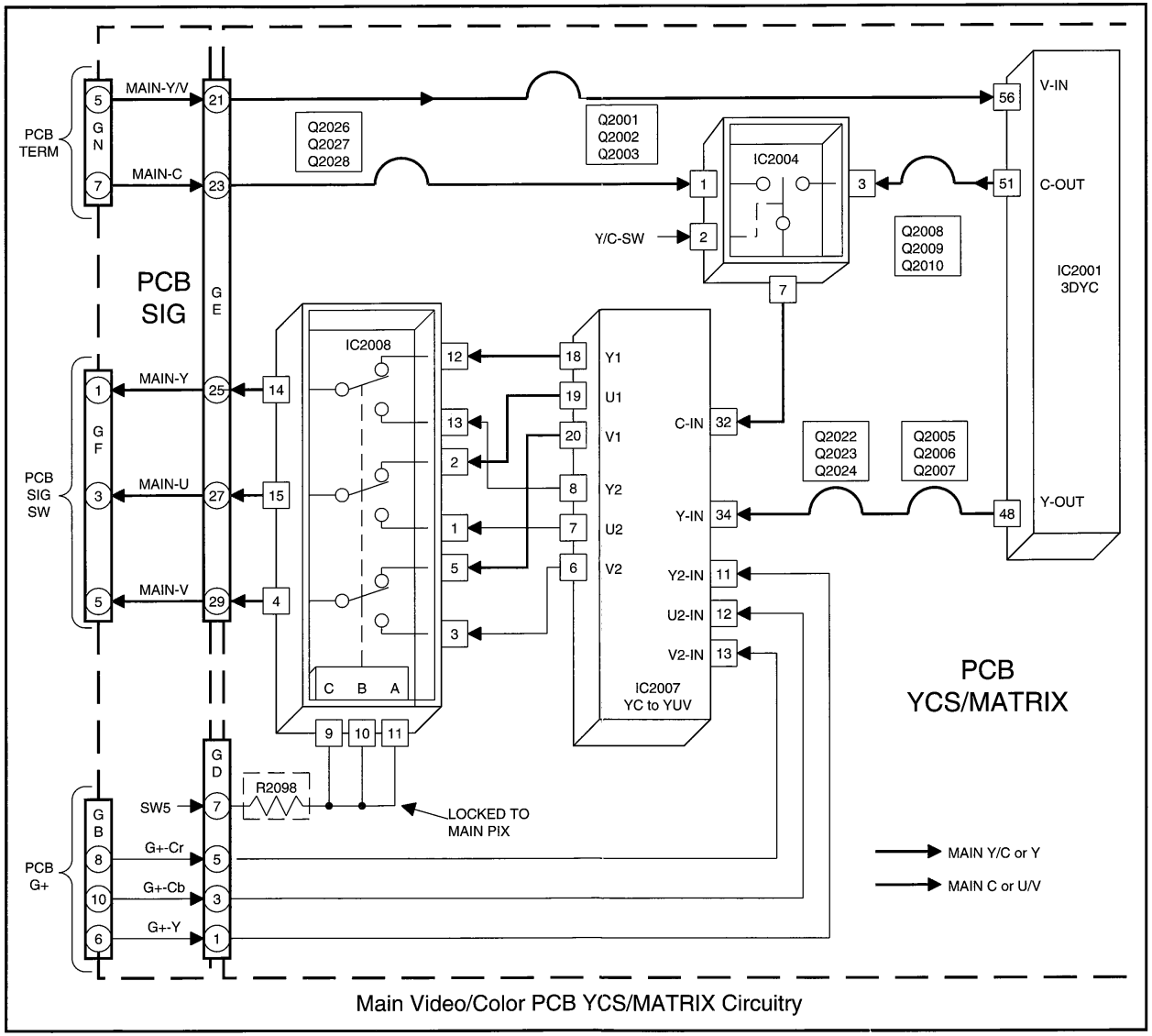
PRINTED CIRCUIT BOARDS

935C823001	ASSY-PWB-MAIN	WS-73903
935C823003	ASSY-PWB-MAIN	WS-65903
935C824001	ASSY-PWB-POWER	WS-73903
935C824003	ASSY-PWB-POWER	WS-65903
935C825002	ASSY-PWB-TERMINAL	
935C826001	ASSY-PWB-SIGNAL	WS-73903
935C826003	ASSY-PWB-SIGNAL	WS-65903
935C829001	ASSY-PWB-DOUBLER	
935C831001	ASSY-PWB-YCS/MATRIX	
935C832001	ASSY-PWB-CRT	
935D392002	ASSY-PWB-CONV-GENE	
935D399001	ASSY-PWB-DBF	
935D400003	ASSY-PWB-DEFL-MINI	WS-65903
935D402001	ASSY-PWB-JUNGLE	
935D403001	ASSY-PWB-SIG-SWITCH	
935D404001	ASSY-PWB-RGB	WS-73903
935D404002	ASSY-PWB-RGB	WS-65903
935D405001	ASSY-PWB-PIP	
935D406001	ASSY-PWB-GUIDE	
935D408001	ASSY-PWB-CONTROL	
935D409001	ASSY-PWB-FRONT	
935D410001	ASSY-PWB-PREAMP	
935D412001	ASSY-PWB-AI	

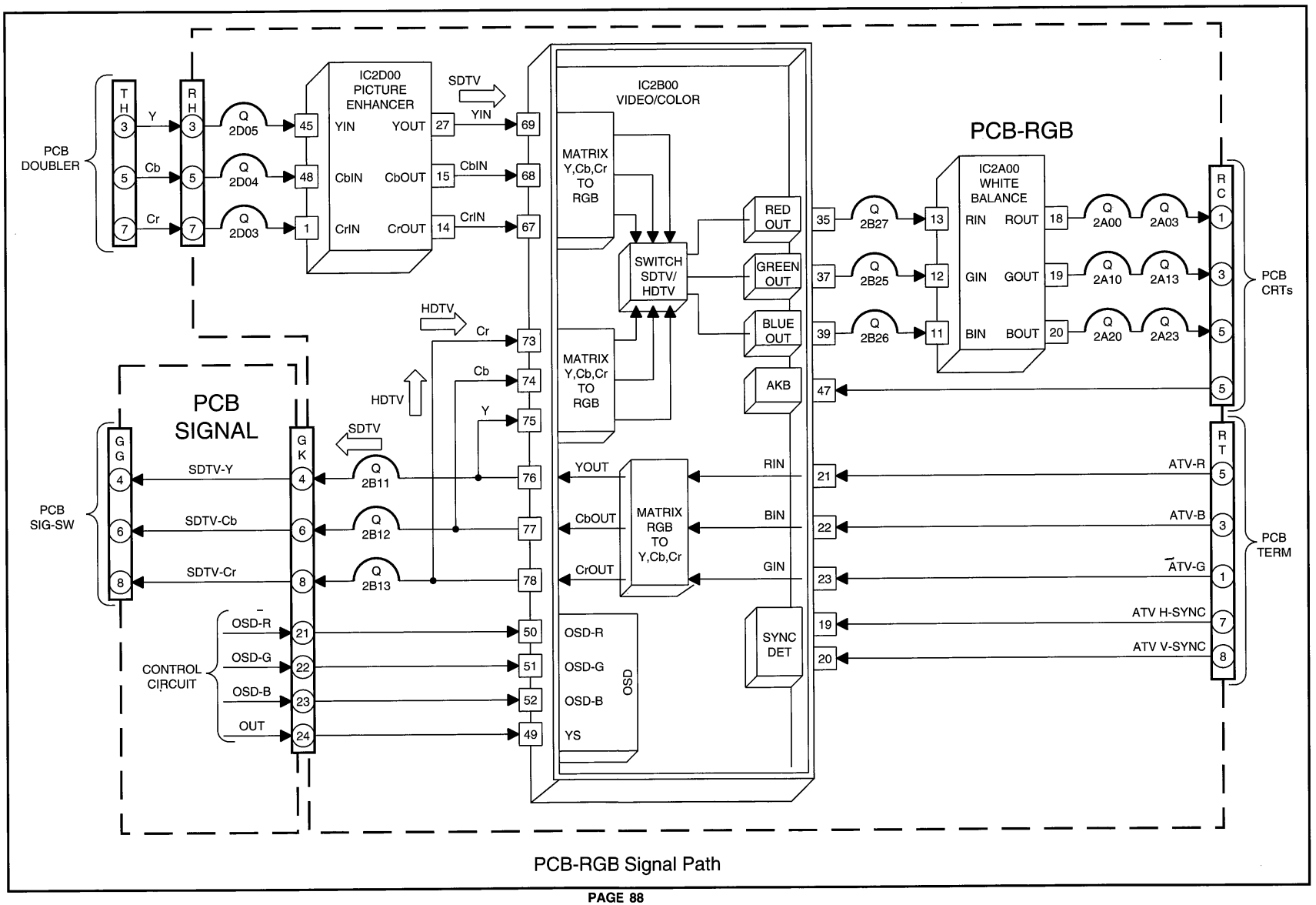
VIDEO/CHROMA SIGNAL PATH OVERVIEW



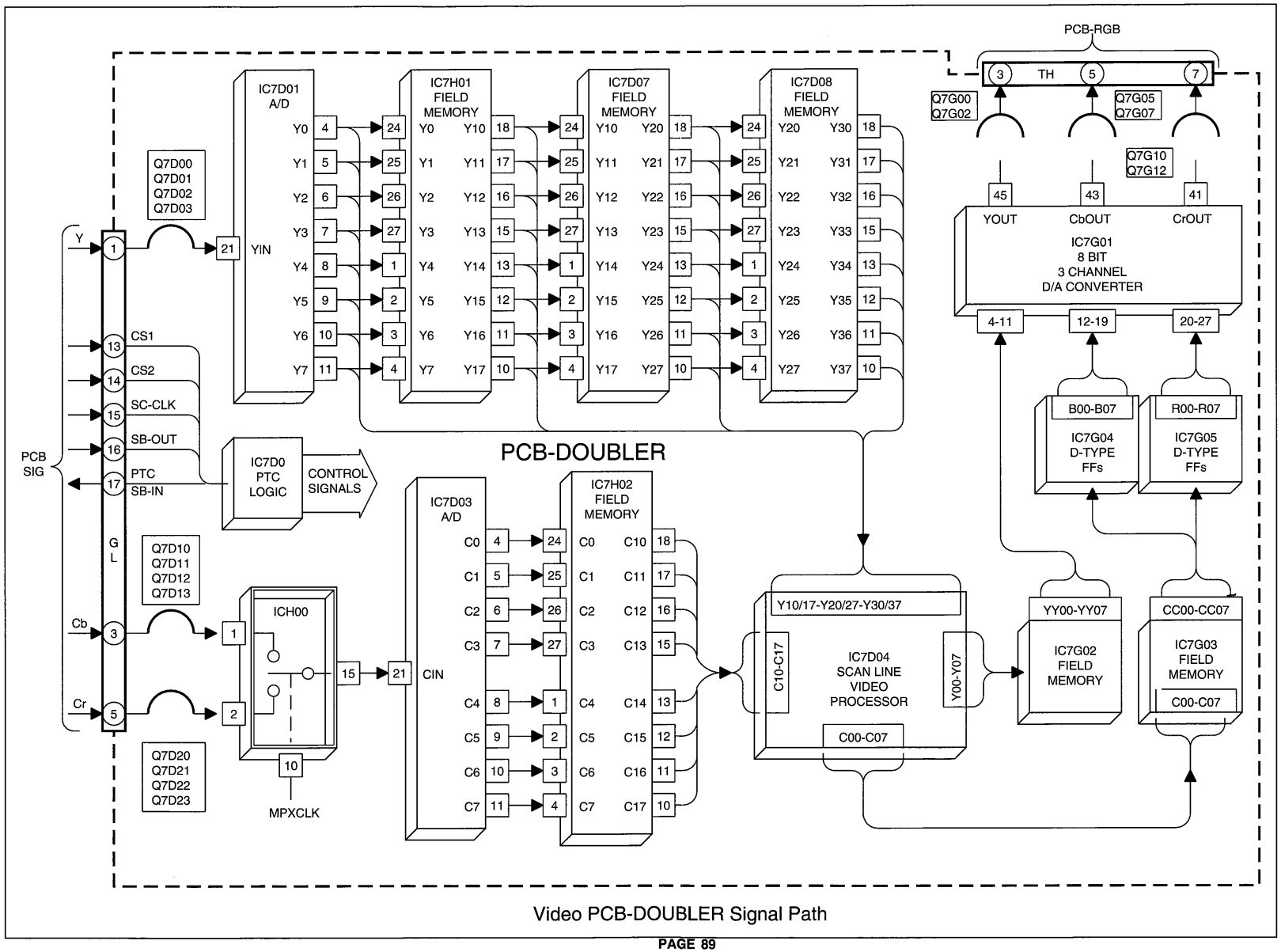
VZ6 Overall PCB Video/Color Signal Path



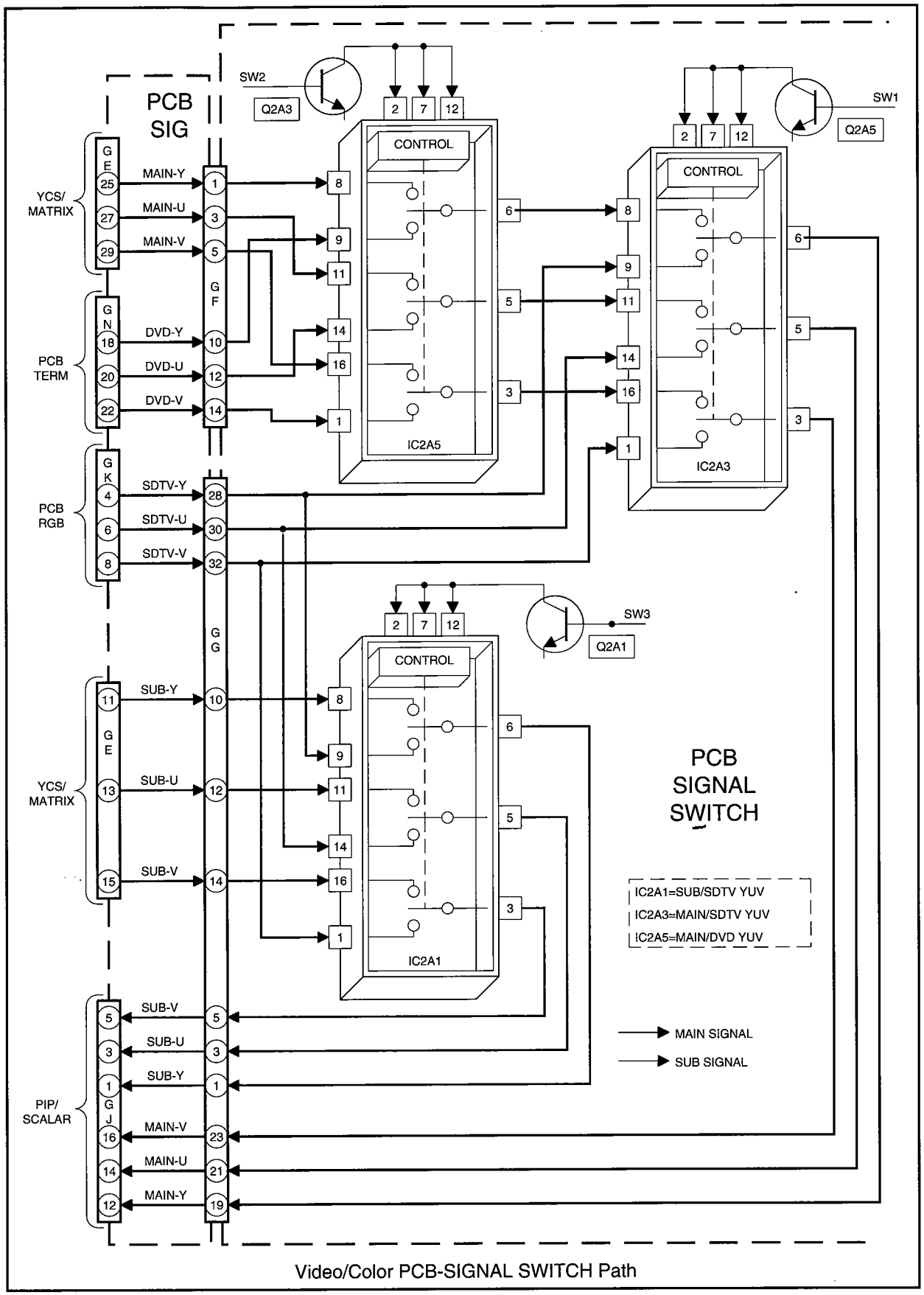
Main Video/Color PCB YCS/MATRIX Circuitry



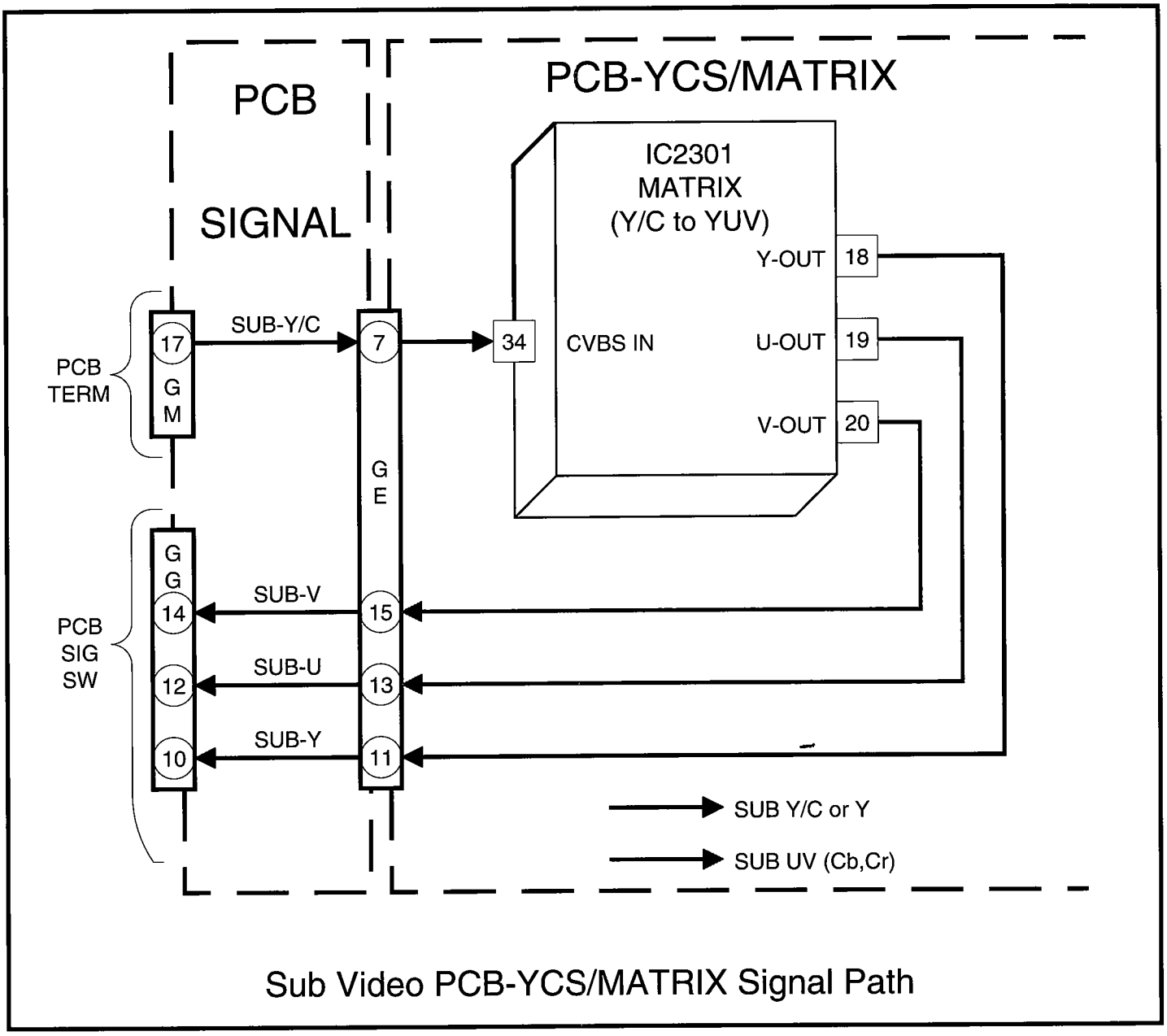
PCB-RGB Signal Path



Video PCB-DOUBLER Signal Path



Video/Color PCB-SIGNAL SWITCH Path



Sub Video PCB-YCS/MATRIX Signal Path